FLIGHT
The AIRCRAFT ENGINEER & AIRSHIPS

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 881. (No. 46, Vol. XVII.) NOVEMBER 12, 1925 [Weekly, Price 6d. Post free, 7d.

Flight

The Aircraft Engineer and Airships

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C.2.
Telegrams: Truditur, Westcent, London. Telephone: Gerrard 1828.

Annual Subscription Rates, Post Free:
United Kingdom .. 30*s.* 4*d.* Abroad .. .. 33*s.* 0*d.**

These rates are subject to any alteration found necessary under abnormal conditions and to increases in postage rates.

* *Foreign subscriptions must be remitted in British currency.*

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Nov. 12 .... **Mr. H. B. Howard, A.F.R.Ae.S. "Some Problems in Aeroplane Structural Design," before R.Ae.S.**
Nov. 15 .... **Coppa d'Italia, Rome.**
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EDITORIAL COMMENT.

OUR attention has been called to a somewhat curious state of affairs in connection with the proposed official acquisition of a batch of American engines for use in a certain new type of British aeroplane. Now, when any British engine is ordered in quantities, one of the stipulations made by the Air Ministry is that the engine must first pass their particular type tests in force at the time, and which relate to the class of engine in question.

Is it Cricket?

We gather that in the case of the purchase of the American engines to which we have referred no such stipulation was made, and that, although it is, we understand, proposed to put one of these engines through the tests, there is no obligation to do so or attaching thereto. This seems a somewhat peculiar attitude to take on the part of that section of the Air Ministry responsible for placing orders for engines, and an official explanation would not, we think, be out of place.

It is, of course, a somewhat debatable point whether or not there is, in the first instance, full justification for choosing a foreign engine for the equipment of the Royal Air Force. A very good case could be made out against such a procedure. But with this question we are not directly concerned here. Even on the argument, however, that the desire on the part of those responsible is that the R.A.F. should be provided with the very best machines and engines which it is possible to obtain, be they British or foreign (and during the past four or five years such a desire does not appear to have been obtrusively evident), there can surely be no justification for handicapping British engine firms by giving preferential treatment to foreign engine builders. The problems of evolving improved aero engines is in itself difficult enough, and costly enough, without adding to them by offering, as has apparently been done in this case, to accept foreign engines on trust. We are not criticising the particular foreign engine in question. We, frankly, know very little about it, and for all we know, it may be good or it may be bad. What we do criticise is the policy. At the moment

there is a flight in progress by certain R.A.F. machines in Africa, which machines are fitted with American engines of another type. We have on more than one occasion criticised the policy of "showing the flag" with a foreign engine, and have received the "explanation" that the Air Ministry regard this flight as part of the R.A.F. training. Very well, let us accept it as such. But if that is so, why publish broadcast official announcements about it? At other times the Air Ministry is most anxious that service flights should not be given publicity. Why, then, make an exception in this case? Discretion and commonsense do not appear to be commodities in which the Air Ministry deals to any great extent, but, at any rate, it might be expected to be impartial, and not to advertise a foreign aero engine on the one hand and at the same time give another foreign engine preferential treatment.

Bravo Manchester!

The example set by Manchester citizens and others recently, on the occasion of the Air Minister's visit to the Lancashire Aero Club last week, is one which, it is to be hoped, will be followed by other large cities in which are situated Light 'Plane Clubs. By the generosity of Sir Charles Wakefield, Sir William Letts, Mr. George Parnall, and the Motor and Brewery interests in Manchester, the Lancashire Aero Club is now promised another three aeroplanes for use by its members, bringing the total number of machines available up to seven. That is beginning to look a much more likely proposition. It is now several months ago that FLIGHT called attention to the fact that if dissatisfaction and lack of interest all round were to be avoided it was essential that the light 'plane clubs should be provided with a much larger number of machines, so that instead of something like 75 flying members per machine the figure could be reduced to reasonable proportions. If that be done the clubs should before long be in that desirable position referred to by Sir Samuel Hoare of being interfered with as little as possible "by Whitehall," and of being *independent.* The presentation of machines by well-wishers of the movement is one way of attaining that goal, and it is sincerely to be hoped that a keen rivalry will spring up among the various cities, and ultimately among the light 'plane clubs themselves, for leading place in the matter of number of machines in use and number of pupils trained. But there is another side to the question, which does not yet appear to have been given sufficient attention, although perhaps this is due to the fact that the matter which it concerns lies some little distance out in the future. We are referring to the position of those club members who have obtained their "A" licence. What is to become of them? How are they to get a certain amount of practice afterwards? These are questions of considerable importance, and the Air Ministry should go into the matter at once. In France there is a system in force by which almost anyone may learn to fly at no cost to himself. Although we have not yet got that far in this country, the light 'plane clubs go some way towards it, and it should be possible to give further encouragement by making arrangements for those who have learnt to fly to be given an opportunity of further practice. Perhaps some form of co-operation between the light 'plane clubs and the various special reserve centres could be arranged so that not only those club members willing to join the reserve would be able to fly, but that others, without actually being part and parcel of the reserve, would be regarded as sufficiently valuable to the country to be accepted for further flying practice. The subject, as we have already said, is one of not inconsiderable importance, and will have to be dealt with in the near future.

The Schneider Cup

Once more we feel it necessary to refer to the recent Schneider Trophy Race at Baltimore, and to the, by now, even more important subject of next year's competition. Concerning the former, there can now, we think, be little doubt that the primary cause for Great Britain's defeat in the Schneider Cup Race was due to lack of time. The machines were not finished in time to allow of certain minor "snags" being discovered before the race. These were in no way serious in the ordinary way, but in a race every ounce counts and every foot per second is of importance. To take but one example, the propellers, generally speaking, were not all they might have been. They vibrated, they did not quite suit the engines, they did not always fit the bosses as well as they might have done. This is nothing against the propellers as such, but the net result was that, although the Napier engines "delivered the goods," the propellers did not make use of the power to best advantage, and, consequently, there was a waste of power which simply cannot be afforded in a race. The propellers are in themselves excellent, and these little troubles would undoubtedly have been discovered and remedied before the machines left this country. As it was, they were not found out until too late. In other words, it was purely a question of time.

Then, again, take the question of pilots. No one with any knowledge of the subject can have other than the greatest admiration for the three British pilots who went out to fly the machines. But what was the position when one comes down to bare facts? Simply that the pilots had not had opportunity to become thoroughly familiar with their machines. They had had no chance to practise cornering. They had not flown sufficiently long on the actual machines to reach the stage where they felt thoroughly at home and happy on them. The whole thing was very much like taking a driver off a touring car and putting him on Brooklands track for three or four laps on a racing car, and then expecting him to drive his car in a really fast race. It simply stands to reason that it cannot be done. Again, time comes in.

Mr. H. T. Vane, Managing Director of Napiers, an interview with whom is published elsewhere in this issue, makes the very sound suggestion that next year the pilots should be service pilots. This suggestion is in no way a slur on the three civilian pilots who went out this year, but is the outcome of facing facts as they are. Civilian pilots, and more especially test pilots, can hardly be spared from their regular work sufficiently long to get in enough racing practice. In other words, the training for the Schneider Cup has now become a science and "whole-time" job. The Americans are using service pilots and are training them gradually on faster and faster machines. We must do the same. And above all, a start must be made at once, if we are to have any chance of winning the Cup next year. The orders for the machines must be placed at once, and pilots must be selected so as to begin preliminary training without delay.

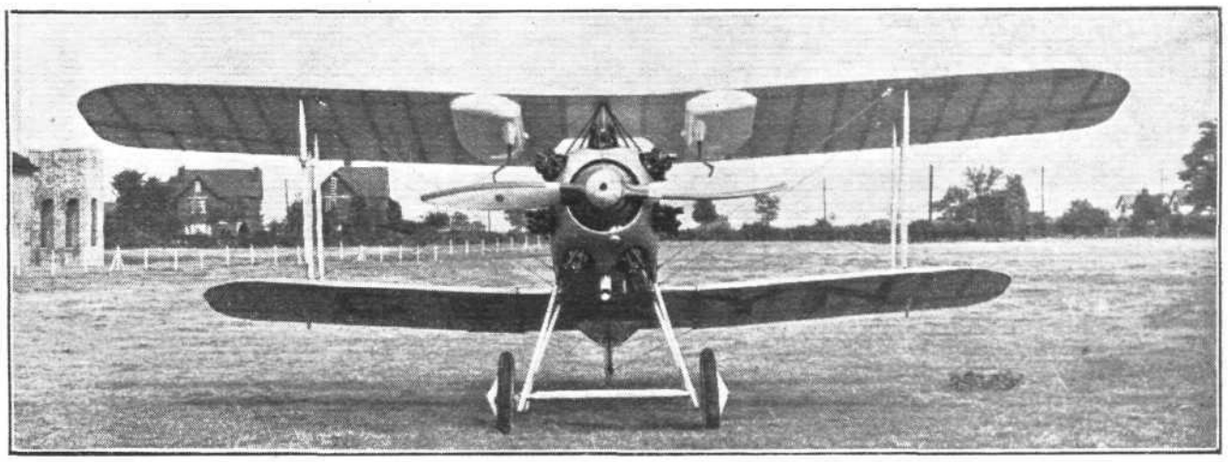
FLIGHT

TWO "GLOSTER" MACHINES

The "Grouse II" and the "Grebe II"

UNTIL recently it has not been possible to describe in detail one of the most successful machines turned out by the Gloucestershire Aircraft Company, *i.e.*, the famous "Grebe." This machine has now been supplied in very large numbers to squadrons of the Royal Air Force and, in accordance with the Air Ministry's regular procedure, when a type has been put into quantity production, it is usually given free as regards publication of detailed descriptions. At the outset it should be pointed out that the Gloucestershire Aircraft Company is now also in a position to supply the "Grebe" to any foreign Government contemplating the purchase of British aircraft.

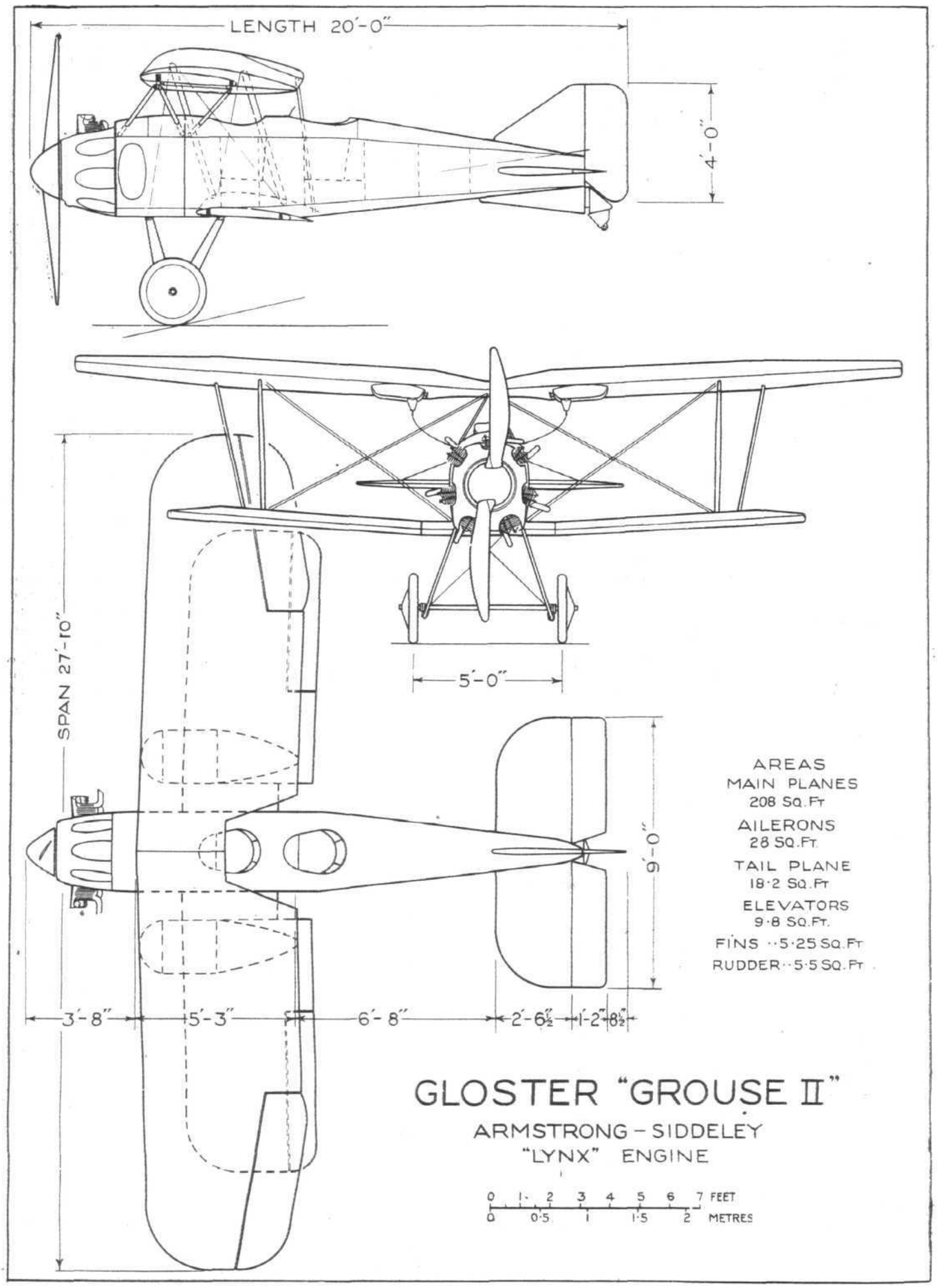
The "Grebe" is, as already mentioned, one of the most successful service machines ever produced by the Gloucestershire Company, and its qualities are, of course, well known in this country. By way of illustrating the remarkable quality of the design and workmanship of the "Grebe," we may call attention to a test recently made, and about which, so far, little has become known. In the United States it has been the custom for some time for test pilots deliberately to attempt to break their machines in the air by diving them at very high speed and then flattening out suddenly. This has been possible in America because American pilots are equipped with parachutes. In this country, however, it has not been customary to fit parachutes as a standard part of the equipment, and it was not until recently that, the Air Ministry having placed an order in America for parachutes, it has become possible for British pilots to carry out this kind of test. Some time ago, however, we are informed, one of the Gloucestershire "Grebes" was tested in this manner by one of the Martlesham pilots. Taking the "Grebe" up to a great altitude, the pilot put his machine into a long, steep dive and, when a speed of something like 240 m.p.h. had been reached, he flattened out suddenly and "zoomed," expecting the wings to break, and being ready to leave the machine in his parachute. Quite contrary to all expectations, the "Grebe" did not break its wings, and a perfectly normal landing was subsequently made. On careful examination afterwards, it was found that nothing had broken in the machine structure, and the only adjustment requiring to be made to put the machine into flying trim again was the tightening up of some of the bracing wires which, not unnaturally, had stretched under the terrific loads imposed. The test is not only an eloquent piece of testimony to the excellence of the design and construction of the Gloster "Grebe," but also to the courage of the pilot. It will readily be realised that for the pilot deliberately to do something which his knowledge and all his instincts tell him to be wrong, requires remarkable courage and a vast amount of will power.



THE GLOSTER "GROUSE II": Front View. The engine is an Armstrong-Siddeley "Lynx."

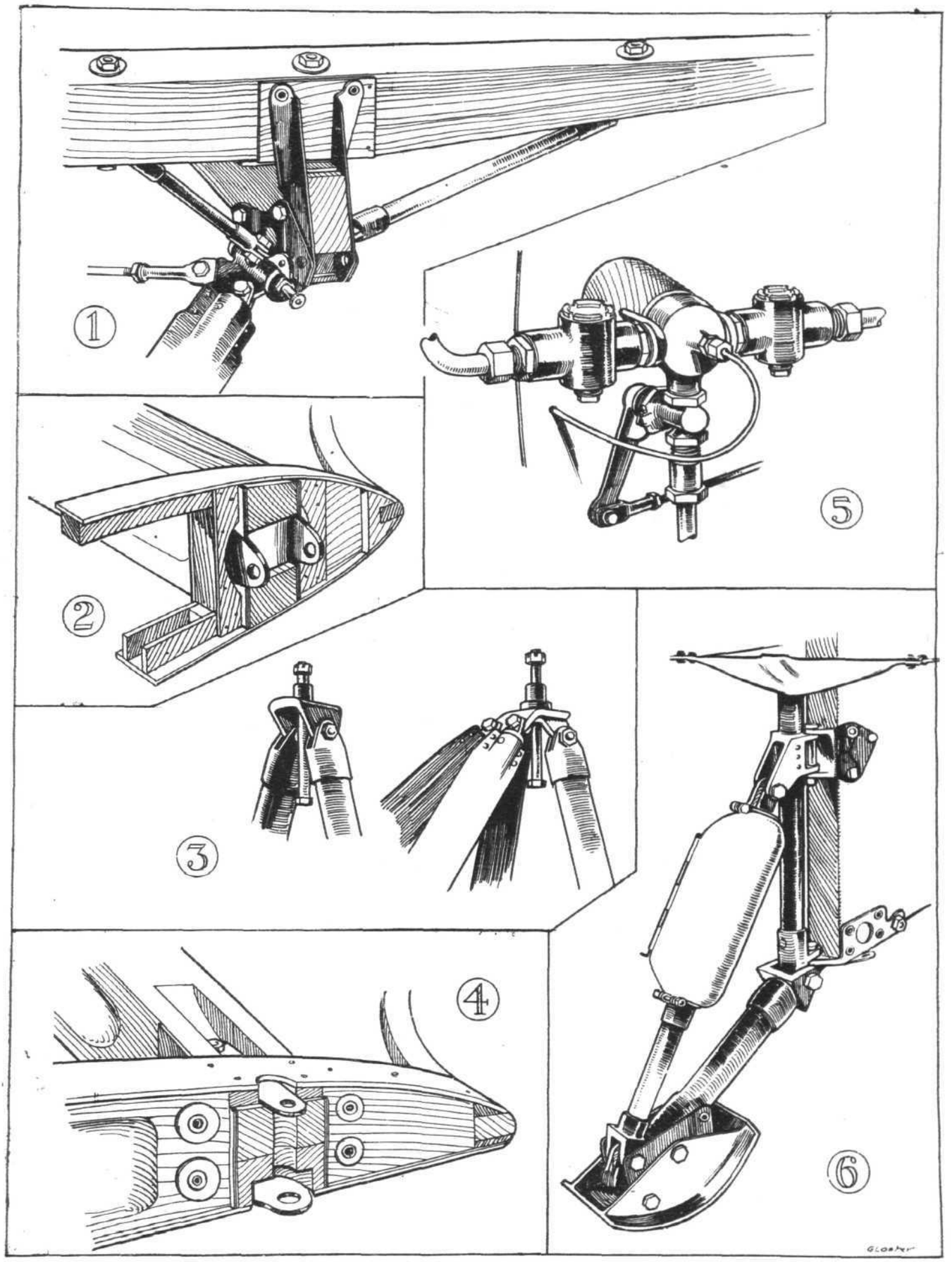
THE GLOSTER "GROUSE II": Three-quarter front view.

Although the Gloucestershire Aircraft Company is prepared to supply the "Grebe" type in any quantity, it is pointed out that a very unique combination is available in the Gloster "Grouse II," and "Grebe II." The former is a two-seater training machine, quite remarkably easy to fly, and yet capable of all kinds of evolutions in the air, while the latter is, of course, a single-seater fighter equipped with all



THE GLOSTER "GROUSE II": General arrangement drawings, to scale.

FLIGHT



SOME "GLOSTER" CONSTRUCTIONAL DETAILS: 1. Attachment of lower wing spar, undercarriage strut, etc., to lower longerons of fuselage. 2. Spar root fitting on lower rear spar engaging with fitting in 1. 3. The two simple bolts on the cabane by which top plane halves are secured. In 4 is shown the top spar root fittings which are locked by bolts shown in 3. Note that the bottom lug is larger, and has a larger hole so as to accommodate the shoulder on the cabane. 5. Is the petrol distributor, by means of which the fuel is taken from either or both tanks simultaneously. The tail skid, sprung by rubber blocks in compression, and steering with the rudder, is shown in 6. The fairing has been removed to show the details.

modern instruments, armament, etc. The reason why the two types, taken together, form such an excellent combination is, firstly, that both in aerodynamic and structural design the two types are very nearly identical, and that the majority of fittings, etc., are interchangeable. This applies particularly to the fuselage fittings, tail skid, wing fittings, etc., so that where both types are used, the number of spares can be reduced to a minimum, which, of course, makes for cheapness.

Furthermore the "Grouse II," is fitted with the Armstrong-Siddeley "Lynx" engine, while the "Grebe II" has an Armstrong-Siddeley "Jaguar" engine. It is, of course, well-known that the great majority of parts are identical in these two engines, so that the same saving in spares applies to the engines, *i.e.*, the "Jaguar" is, practically speaking, a double "Lynx," the cylinders, pistons, etc., being identical in the two types, so that again the number of spares that has to be stocked can be cut down to a minimum, as the great majority of spare parts can be used for replacing damaged or worn-out parts in either engine. There is, therefore, a great deal of inducement for those contemplating purchasing aerial equipment in Great Britain to give the two Gloster types very careful consideration, since coupled with the excellent flying qualities of both types, there is this further advantage of a reduction of spares.

As the two Gloster machines are so very similar, the following descriptive article may be taken, except where otherwise stated, to apply to both. The photographs and scale drawings published this week illustrate the "Grouse II," and photographs and scale drawings of the "Grebe II" will be published in our next issue.

THE GLOSTER "GROUSE II": Three-quarter rear view.

The two Gloster biplanes under review in the present article are of somewhat unusual aerodynamic design in that the top plane is of much larger area than the bottom plane, but is of different wing section. Neither section is quite identical with any section of which particulars have been published, but it may be said that the section of the top plane resembles that known as airscrew 4, while the bottom plane is very similar to airscrew 2. This means of course that, whereas the bottom plane is of the type known as a "thin" section, the top plane is a thick or high-lift section.

There seems to be reason to suppose that the excellent flying qualities of the two machines are due in a great measure to this particular aerofoil arrangement. Mr. H. P. Folland, who is chief engineer and designer of the Gloucestershire Aircraft Co., has employed this combination further to gain somewhat in efficiency, by staggering the two wings in relation to one another and by placing the top plane at a slightly larger angle of incidence than the bottom plane. The result of this arrangement is that a certain amount of fore and aft stability is provided so that the tail of the machine can be kept fairly small. It seems probable that at top speed the upper wing is carrying nearly the whole load, and by suitable design of the difference in angle of incidence and stagger, it is possible so to arrange matters that in that case the top plane is flying at a point of its curve where drag is small, while the bottom plane, being a thin aerofoil, will also, of course, have a very small drag, with the result that the machine approaches monoplane efficiency much more closely than is possible with a biplane arrangement in which the two wings are of the same area and of the same wing section. In other respects the two Gloster machines are of orthodox design but they show very clean lines, in which the Gloucestershire Aircraft Co.'s racing experience has been made use of in so far as it is applicable to service types of machines. The Armstrong-Siddeley engine is neatly cowled-in, and the streamlined shape is further retained by the special type of propeller boss which has for several years been a feature of the Gloster machines. In this type of propeller the metal spinner usually found is absent and its place is taken by a wooden spinner or enlarged boss built of wood and integral with the propeller itself, from the laminations of whose blades it is made.

Another feature of the two Gloster machines, which is not, however, peculiar to these but is incorporated in the majority of modern British service machines, is the placing of the petrol tanks in the top plane where fire risk is small, and where, moreover, direct gravity feed to the engine can be provided. In this connection it should be pointed out that our photographs of the "Grouse II," published herewith, show the older type of tank, whilst the general arrangement drawings might in this respect be regarded as a compromise in that in the front elevation the new type of tank is shown while the dotted lines in the plan view represent the outline of the older tanks. The type of tank shown in the front elevation is fitted as standard in the latest machines. This type of tank is almost entirely buried inside the wing and therefore offers considerably less head resistance than did the older type shown in the photographs. A further difference which should be pointed out relates to the ailerons of the top plane. In the photographs these have their trailing edges in continuation of the trailing edge of the main plane, but in the latest type the aileron projects slightly, as shown in the plan view of the general arrangement drawings.

The aileron control of the Gloster machines is somewhat unusual in that only the lower ailerons are operated direct, the movement of these being transmitted to the top plane flaps by a single strut on each side. No cables passing over pulleys are employed in the aileron control, tie rods running to a "T" crank being used in the lower plane from which cranks the tie rods run direct to the controls, short lengths of cable being used where the controls pass through fibre blocks into the fuselage. The arrangement of the "T" cranks is such that the ailerons are given a differential movement, and doubtless this feature has a good deal to do with the excellent manœuvrability and the general easy handling of the machine.

Before leaving the subject of the aerodynamic design of these two Gloster machines, it should be pointed out that in the top plane the master section is employed for part of the span only, as the wing is thinned down towards the tips and also at the ends towards the attachment to the centre section struts, or rather to the struts of the cabane, as no top centre section, in the ordinary sense of the term, is employed. By thinning down the wing in the centre the view from the cockpit is considerably improved and in the case of the "Grouse II," access to the front cockpit is somewhat facilitated.

(To be continued.)

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THE 1925 SCHNEIDER TROPHY RACE

"Flight" Correspondent's Special Account

So genuine and general has been the interest in this year's race for the Jacques Schneider Maritime Trophy that we make no apology for referring to the subject again this week, the more so as a special account of the race and the happenings of the days preceding it, as well as photographs of machines, incidents and personalities, reached us too late to be included in the special coloured supplement dealing with the Schneider Trophy Race which we published last week. The detailed "story" by an eye-witness who had quite exceptional facilities for obtaining first-hand information adds a good deal of useful knowledge to what has already been published, and will on this score doubtless be read with considerable interest.

Concerning the happenings on the day of the navigability trials our special correspondent writes as follows: Baltimore, October 24, 1925.—On Friday everyone was astir early, and Mr. Vane left the hotel at 7 a.m. with Biard, Broad, Mitchell, Jones and Jackson, ready for the start of the navigability trials. The draw for these trials had taken place, and the order was Ofstie, Cuddihy, De Briganti, Broad, Biard and Morselli.

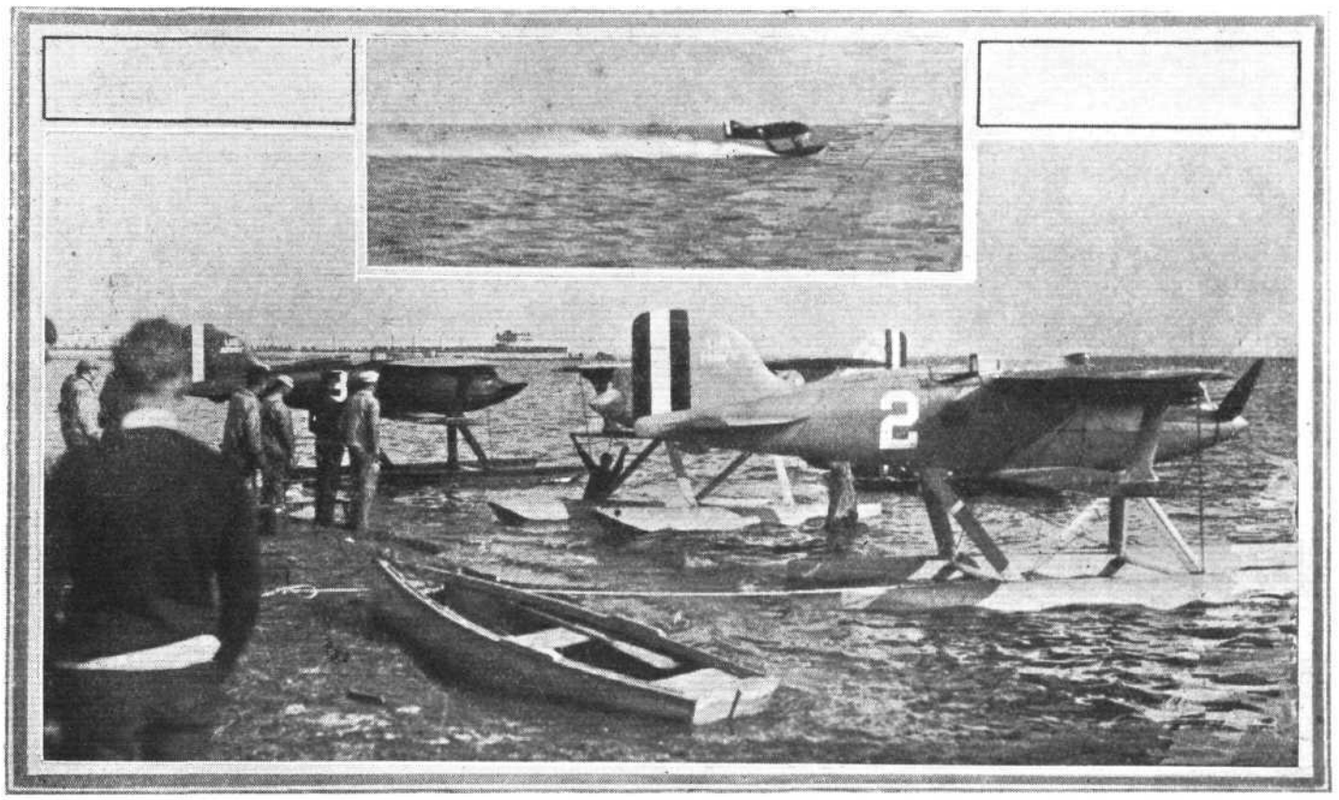
All the British visitors had gathered at Bay Shore Park for the event. Present were Messrs. Vane and Fairey, Major Buchanan, Mr. Longden, Col. Darby, Capt. Wilson, Wing-Commander Stedman, Mr. Dawson, and Wing-Commander Scott.

When the British contingent arrived, Cuddihy had his machine out, and was doing some practice flights, and shortly returned as a landing wire had broken. This was the first time the machine had been flown at Bay Shore Park..

Shortly afterwards Ofstie took the slipway, his engine was run up, and he took off. After taxying out some distance he rose after rather a long run, and made one or two circuits and then landed to go through his navigability tests. He accomplished these successfully, the machine performing well and looking beautiful with the sun glinting on the golden wings. On landing his machine was moored to the buoy allotted for it.

In the meantime De Briganti, one of the Italian competitors, was on the slipway preparatory to his engine being run up. Owing to over-doping this took rather a long time, but eventually he was away. After making a few circuits to test out the machine he landed, presumably to start his taxying tests. Unfortunately his engine stopped, and he had to be towed back to the slipway.

By this time Broad was ready on the slipway. Soon his giant Napier was roaring,and after a few minutes' warming he was cast off and taxied slowly to the starting line. He came through his trials successfully, making beautiful get-aways and landings. On his tours of the course he made some wide sweeps over the hangars, presumably because he wanted to get in as much flying practice as possible. He had his engine full out, and it was giving a beautiful note.

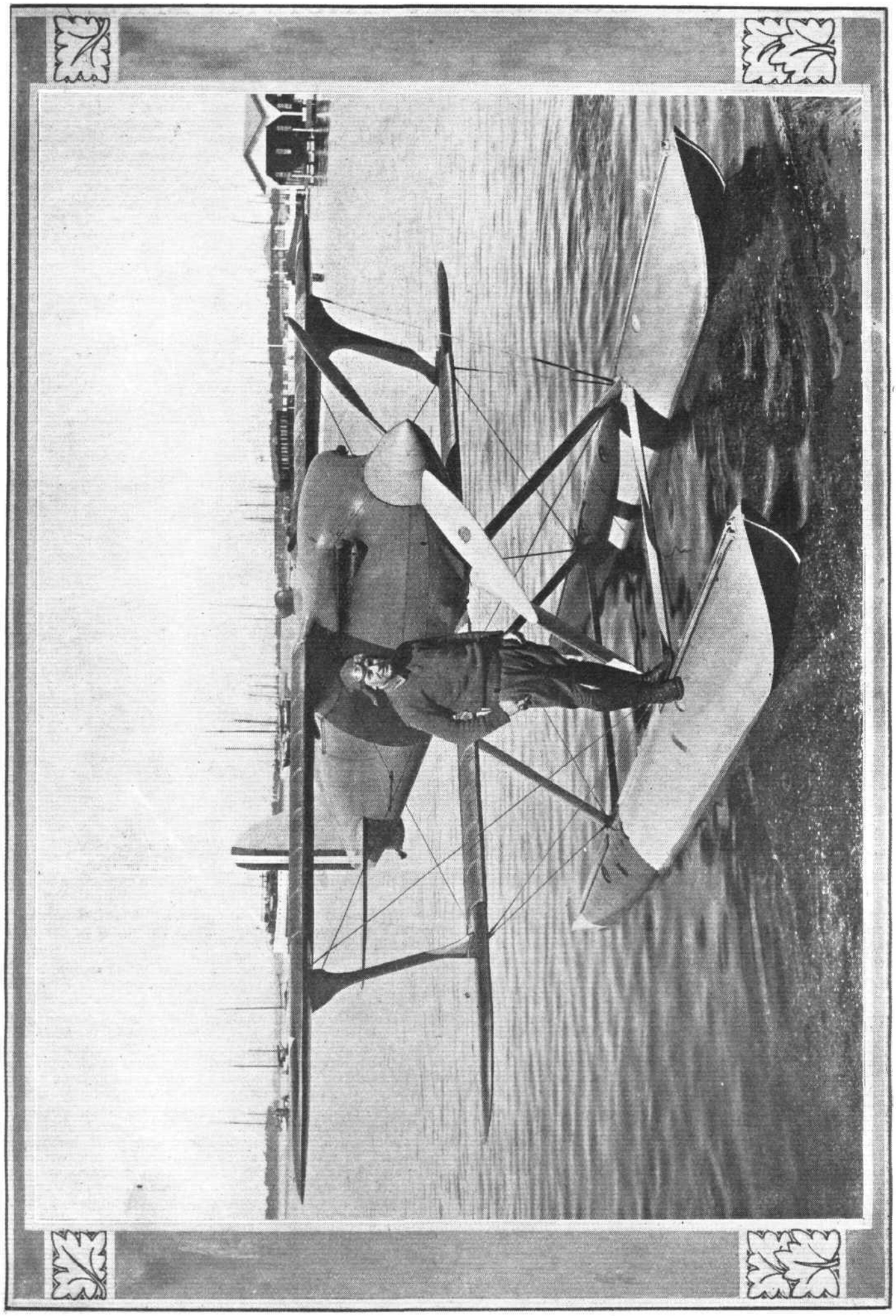


THE SCHNEIDER CUP RACE: The three Curtiss Racers on the beach at Bay Shore Park. Lieut. Doolittle's famous winning machine is the one in the background. Inset shows Doolittle taking off at the start of the race which he won in such splendid fashion.

When Broad had left the slipway the Supermarine-Napier S.4 was brought out. Biard soon had his Napier roaring away, and without any waste of time cast off and taxied out towards the starting line, with Mitchell in attendance in a motor-boat.

Biard made a beautiful take-off and was soon flying round over the hangars, where he made rather a steep bank. His height was about 200 ft., when, to the dismay of the watching crowd, he appeared to be in difficulties. He seemed to have lost control. He endeavoured to right the machine, but it fluttered down, giving one the impression Biard was side-slipping it. It was of no avail, however, and the port float and wing hit the water first, the whole machine settling down right way up. Biard was not thrown from the cockpit, but the floats and undercarriage were completely smashed, although little damage was done to the fuselage. Biard climbed out and clung to the tail.

We heard this afterwards—we were too far away to be of assistance to him and the anxious onlookers had to wait helplessly whilst those on the water went to his assistance. From the shore it looked impossible that he could have escaped. Broad, who was just finishing his tests, immediately taxied out on the Gloster-Napier, and a Voight



THE SCHNEIDER CUP WINNER : The Curtiss-Army Racer which Lieut. "Jimmie" Doolittle, here seen standing on one of the floats of his machine, flew to victory at the magnificent average speed of 232·573 m.p.h.

machine also went to his assistance. When picked up it was found that, beyond a shaking and ducking, he was quite fit, much to the relief of all present. He walked down the pier and was wrapped in blankets and kept warm until later in the day he was removed to the Southern Hotel.

The other competitors finished their trials without incident, although Cuddihy was delayed by a broken landing wire.

When Biard's accident occurred, it was decided that the special Gloster-Napier III should be flown by Hinkler in the race.

Hinkler, although not expecting this, was delighted, and strenuous efforts were made to prepare the machine for flight. The final preparations were not completed until almost dark, and as Hinkler had not flown this machine out here he took off to make a circuit of the course. Unfortunately he noticed a landing wire was broken and so landed to have it repaired. When the repair was completed it was getting quite dark and the British Committee decided that Hinkler should not take the grave risks a flight with a high speed machine in that light would have entailed. Hinkler was greatly disappointed as he was quite prepared to take all the risks in order to give Great Britain a second machine to rely upon.

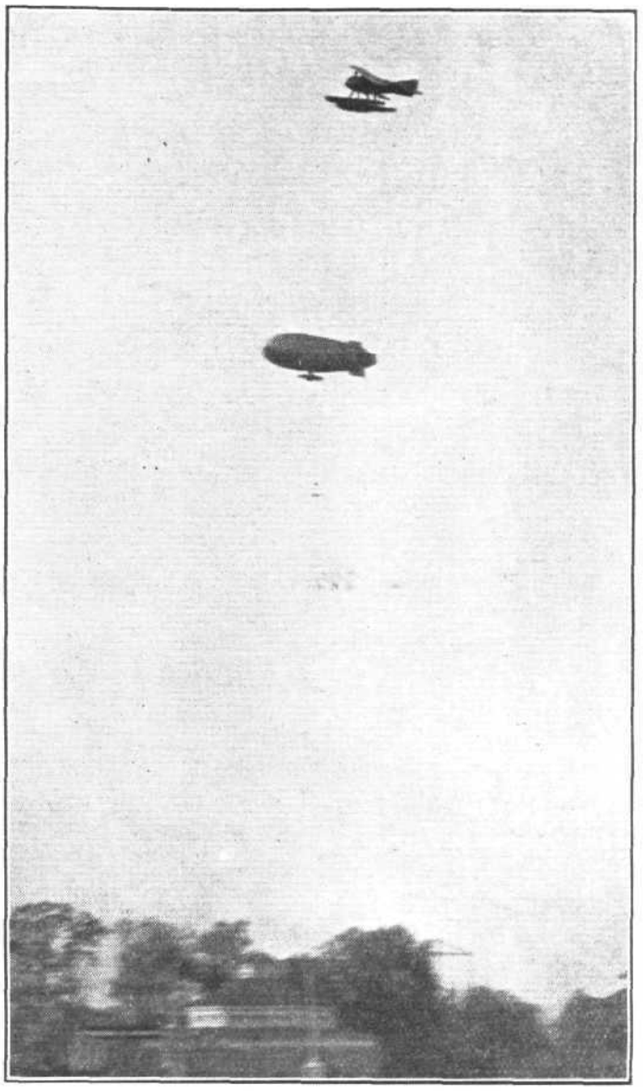
The Americans, led by Mr. Keyes, of the Curtiss Co., immediately started to see if the rules allowed of Hinkler doing his tests on the morning of the race, and after meetings lasting well into the night they decided that this was permissible and pressed the British team to accept the offer. The British were reluctant to accept such a sporting offer from the Americans and Italians, but after further consideration, agreed.

Hinkler therefore made tracks for Bay Shore Park at 5 o'clock on the morning of the race but again he was doomed to disappointment. He found very misty weather and a heavy sea, and although he went on the water he found it was really too rough to attempt the trials.

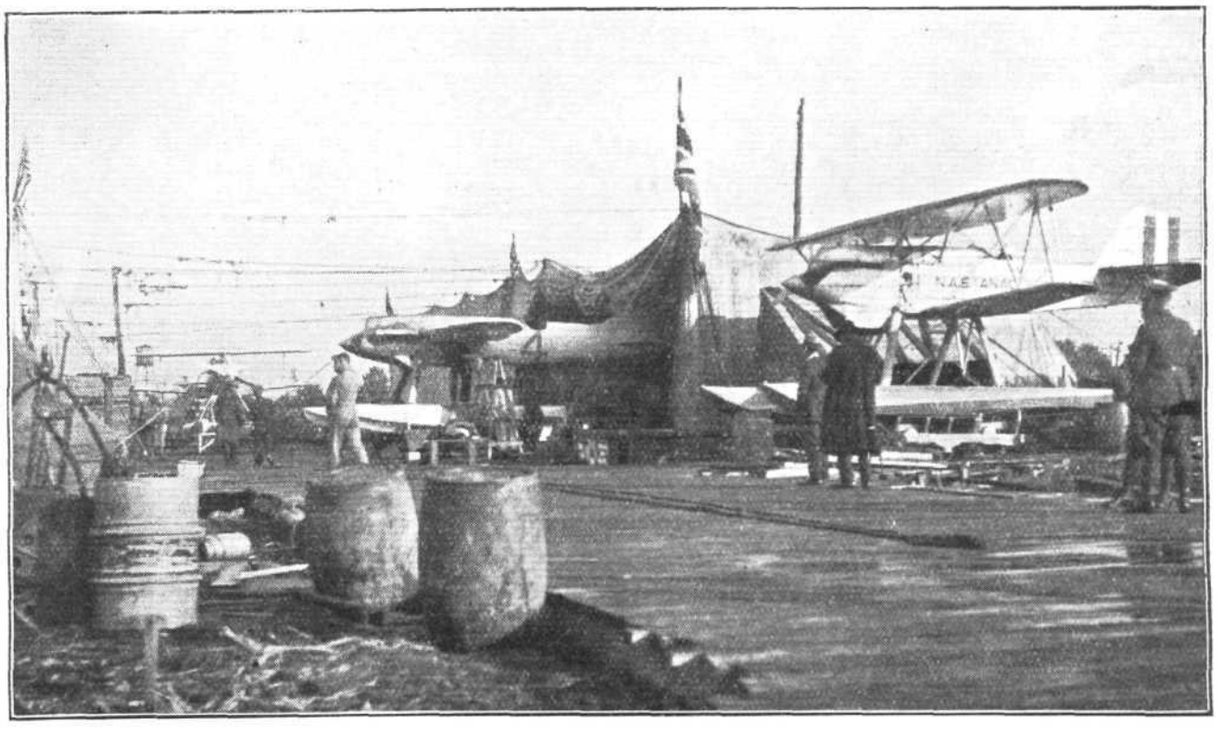
Today, October 24, the morning of the race, the weather is wretched. Heavy sea mist and rain. As I write at 10 a.m., it certainly looks as if the race will be postponed until tomorrow.

We have found all the Americans particularly sportsmanlike and nice. Apart from the bad arrangements for the housing of the machines—this was caused by the lack of money of the ruling club more than anything else—they have tried to help us in every way. Mr. and Mrs. Keyes invited the British visitors to dinner at the Southern Hotel last night.

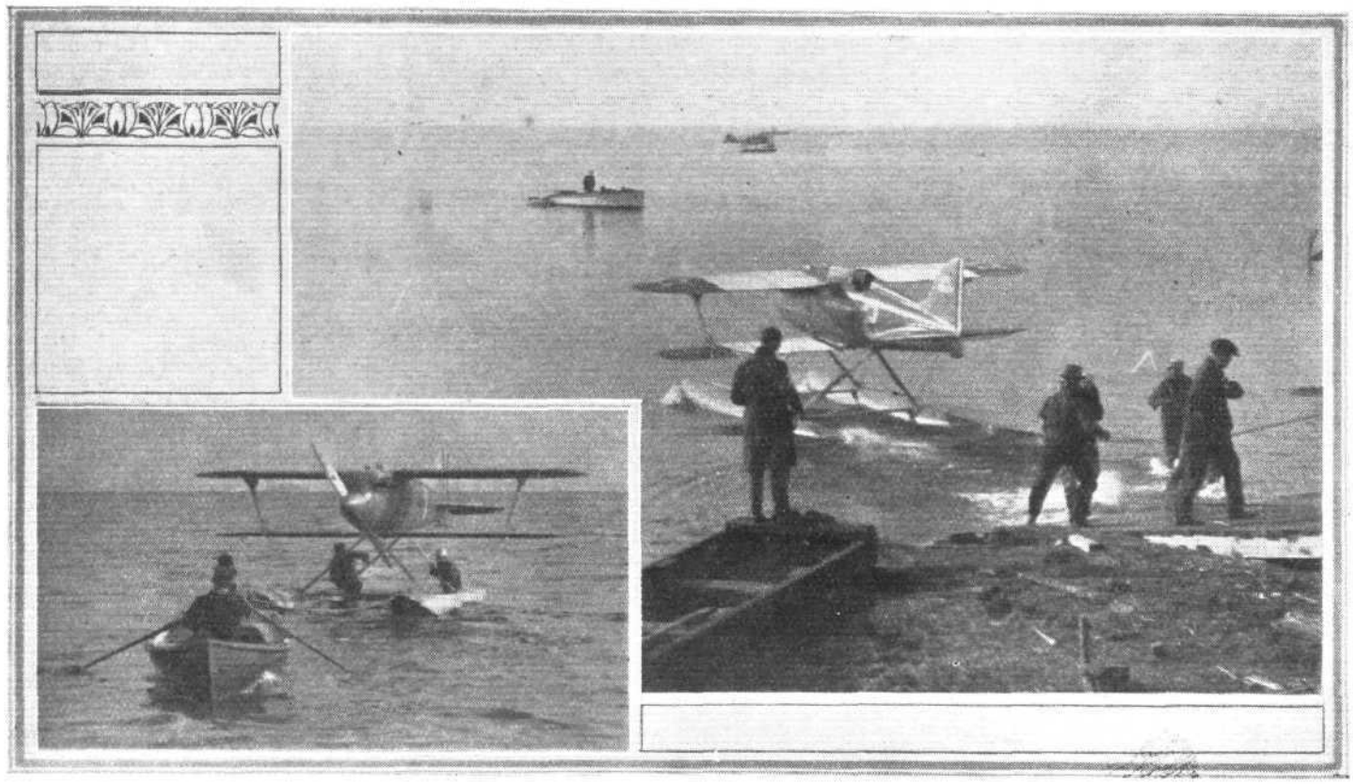
An enjoyable evening was spent, and in conversation Mr. Keyes expressed his keen disappointment that the Supermarine machine should



THE SCHNEIDER CUP RACE: Broad cornering on the Gloster-Napier III over the pier at Bay Shore Park.



ON THE SLIPWAY AT BAY SHORE PARK: In the foreground is a U.S. Navy "dog ship," and farther back the Supermarine-Napier S.4, while in the background may be seen the Gloster-Napier III.

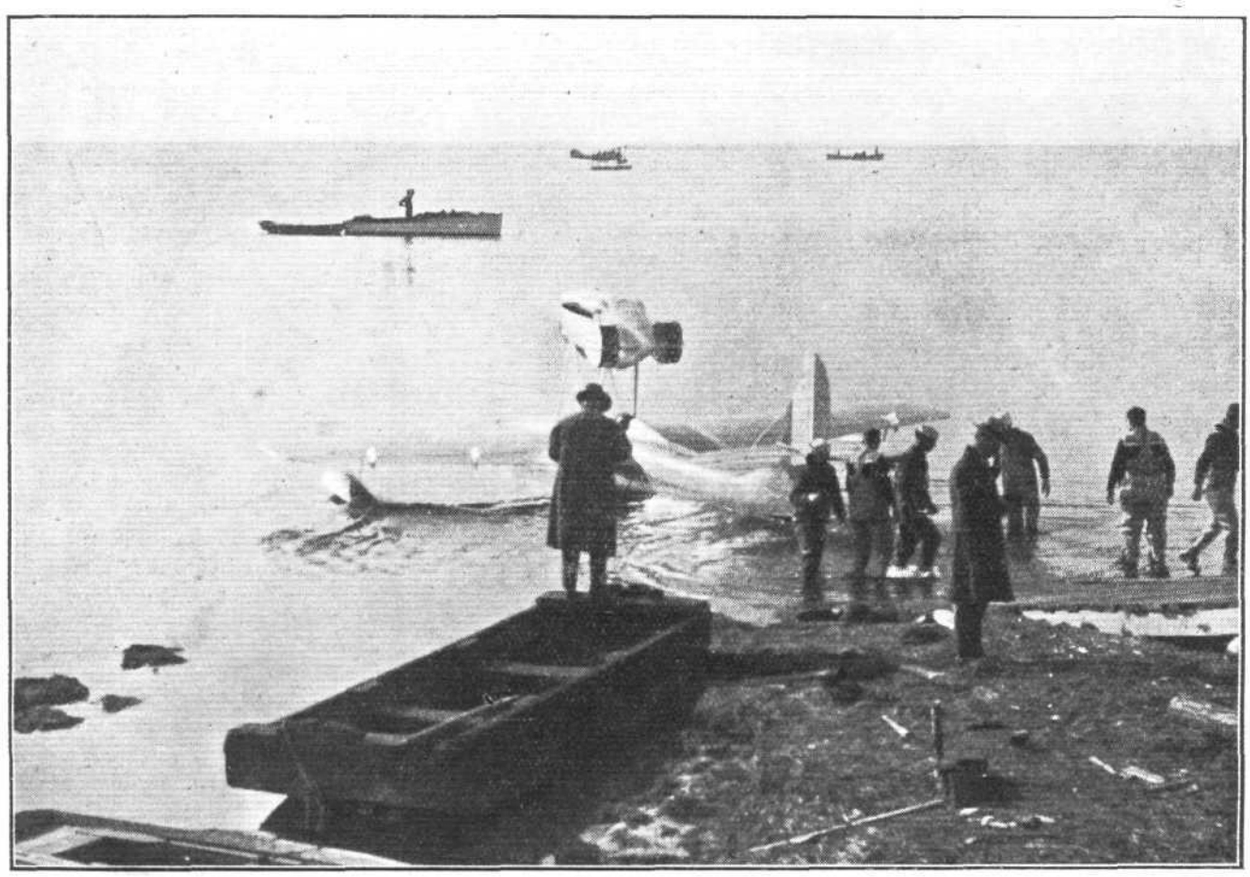


THE SCHNEIDER CUP RACE: The larger photograph shows Lieut. Ofstie leaving the slipway at Bay Shore Park for the navigability trials on October 23. In the smaller photograph is seen the Curtiss-Navy Racer No. 1 shortly before the start of the actual race on October 26.

be out of the race. Win or lose, he said, he really did want one of his machines to fly against this machine which, despite its early demise, had raised the prestige of British aeroplane design considerably.

Britain's hopes rely upon Broad, the "Gloster" machine and the Napier engine. Will this combination succeed or will the Curtiss prove too fast?

Other visitors today at the hotel are Commander Towers,



THE SCHNEIDER CUP RACE: De Briganti leaves the slipway in the Macchi M.33. Note how deep the machine is in the water.

Messrs. Ide, Orville Wright, Griffith Brewer, and Hon. G. Cunliffe.

P.S.—The *Valerian* under Commander Usher has been very good. He immediately placed at our disposal a dozen of the crew, who have been at the hangars all day from the time they arrived and have been of great assistance. He has also placed signallers, etc., at our disposal whenever required.

The Race

Baltimore, October 27.—As I anticipated, the race was postponed on Saturday owing to the wretched weather. It rained all day with heavy sea and wind, and any idea of a race was soon abandoned. At 10.30 a.m. the contest committee called the race off, and as the weather reports were none too good for the Sunday, it was decided to postpone the race until 2.30 on Monday, October 26.

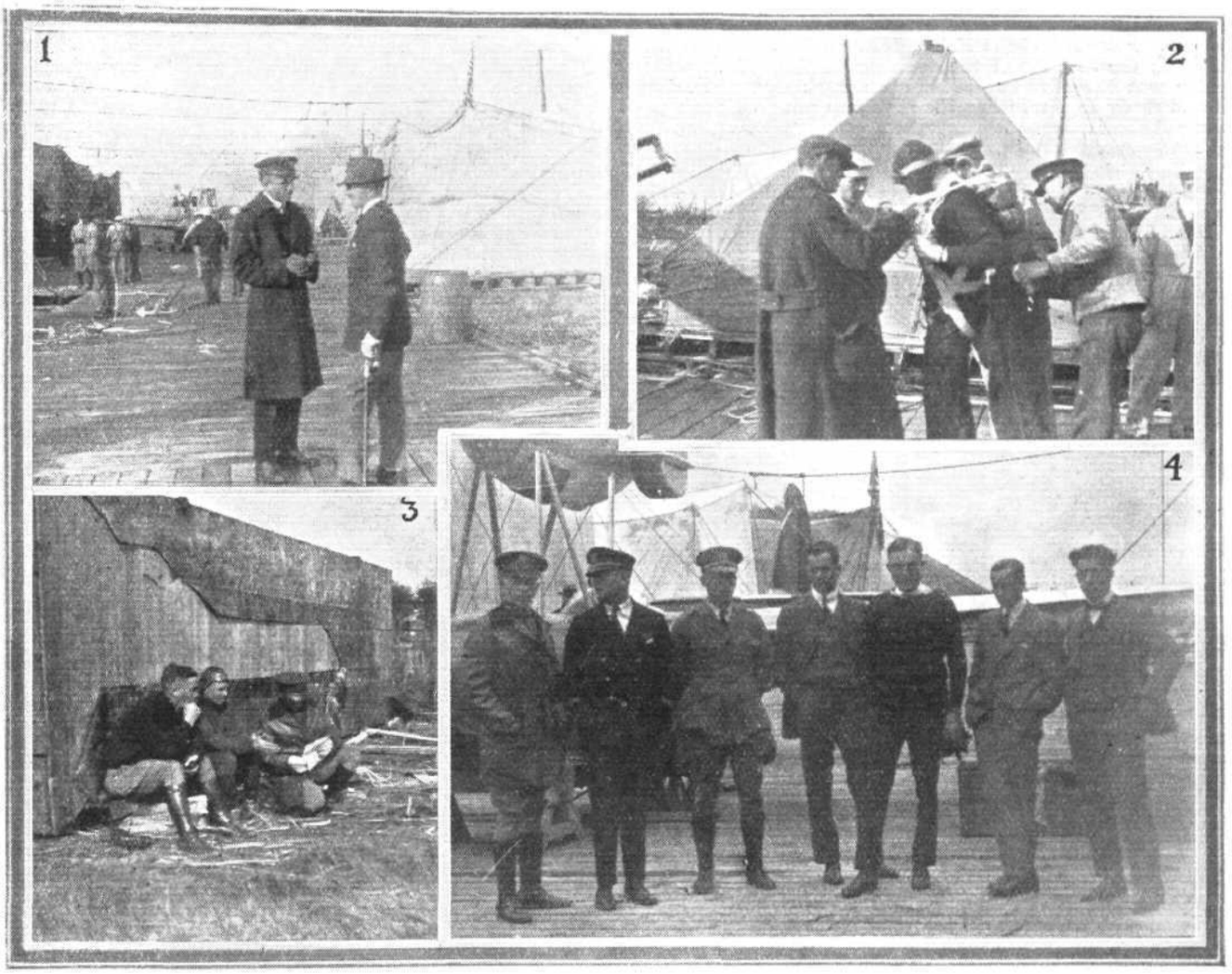
Hinkler, who, as I stated, had not been able to complete his tests the previous day, was up at daybreak on Saturday and down at the hangars, ready to get his machine through. The waves were very high and the wind high, but this did not daunt him, and he actually taxied the machine about half a mile before he finally decided that the risks of breaking up the machine were too great. The weather got worse as the day wore on, and no attempt was made by anyone to take the air.

In the evening the dinner which had been arranged by the Flying Club of Baltimore for the presentation of the cup was altered to an informal supper. It was well attended, but, beyond a few words by the Governor of Maryland, during which he expressed the regret of all at the accident to the Supermarine-Napier S.4, there were no speeches.

Sunday opened even worse than the Saturday. Ever hopeful, however, that enthusiastic optimist Hinkler was out at the hangars before it was light, and waited all day hoping against hope that a brief lull would enable him to complete his tests. Unfortunately, his wait was in vain, as, instead of improving, the weather got steadily worse. The rain ceased about midday, but the wind increased in force, and by the evening was blowing a hurricane. The crews at the hangars had to stand by all day and night to keep a watch on them, as every moment it was expected that they might be blown down and the machines wrecked. It was Sunday evening that at Baltimore the U.S. Navy experienced the disaster when 17 of their machines were dashed from their moorings and broken up in the sea.

On the Monday morning the weather had improved. Hinkler—with whom daybreak rising had become a habit—was again at the hangars as soon as it was light. He found the sea still very heavy. However, owing to the shortness of time available, he had to make his tests immediately. The water near the shore appeared to be all right. When making his first landing Hinkler found the water very rough indeed, and on landing the machine got one or two bad shocks which bent one of the struts, making the undercarriage structure collapse. The machine slowly sank on to the floats. No serious damage was done. Hinkler did not even get a wetting, and the machine was towed to the slipway, leaving Britain with one solitary competitor.

By 10 a.m. the weather had improved so that the contest committee decided to hold the race. Owing to the disaster to the Navy 'planes the previous evening, the demonstrations which were to have taken place at 12.30 had to be curtailed considerably. We were, however, entertained to some formation flying by D.H. machines, some parachute dropping



PERSONALITIES AT BAY SHORE PARK: In 1, the American and British team captains, Commander Wick and Captain Wilson, are seen discussing the chances. 2, shows Lieut. Ofstie having his parachute strapped on. 3, Lieuts. Cuddihy, Doolittle and Bettis (the winner of the Pulitzer race) talking things over. 4, is a group of Schneider Trophy pilots, including, from left to right, Lieut. Bettis (not in the Schneider), Lieut. Conant, Lieut. Cuddihy, Lieut. Morselli, Lieut. Ofstie, Capt. Broad, and Lieut. de Briganti.

—which, of course, is second nature to the American airman—and some delightful stunt flying by Lieut. Conant, the reserve pilot, on a P.1 single-seater Scout.

About 1 p.m. the competing machines were brought from their hangars and their engines started. The Americans moved their machines from the slipway and anchored them a short way out. Broad's machine was towed to a selected spot behind the starting-line. This proved to be the wisest plan, as the Americans had to taxi over half-a-mile to reach the starting-point, and, as these machines are somewhat dirty on the water, they did not have a particularly good time in getting round. In fact, Cuddihy, on going out, decided to take off and fly his machine round.

Doolittle's was the first machine to start, as the Supermarine-Napier had eliminated itself, and punctually at 2.30 Bert Hinkler—who had to do something—fired the first rocket to inform Doolittle that he had five minutes in which to cross the line. He made a beautiful get away and was soon heading off down the first leg of the course. At this time, Broad's engine was started. It was soon roaring away, and Broad was all ready to start when the rocket went to let him know he could start away. Broad made a perfect take-off, leaving the water cleanly, and probably better than any of the other machines. Cuddihy followed, and then Ofstie, and after him De Briganti. Owing to engine trouble, Morselli was unable to start.

Doolittle flew his first lap at the wonderful speed of 223 miles per hour—a speed greater than the most optimistic considered possible. Broad followed second and his speed was 194·275. The others followed in order, and it was soon seen that provided no trouble occurred, the Americans would be one, two and three in the race. Doolittle flew an extraordinary race, and all are loud in praising the way he took the corners.

Broad was flying a beautiful course, and apart from Doolittle, was cornering better than any of the others in the race. His sweeps were rather wide, but not so wide as Cuddihy's or Ofstie's.

The pilots kept their places till about the third lap, when Doolittle passed Broad. During the sixth lap, Ofstie was overdue, and some time later it was found that on the farthest point of the course his engine suddenly cut out and he had to land. To show how sudden it was, he had to make his landing down-wind. When Cuddihy was about half-a-mile from home, his engine seized up and he had to descend. His engine caught alight, and he must have had a nasty five minutes, as he had to use an extinguisher to put the fire out.

Doolittle flew a splendid race to the end and landed amidst cheers. Broad was the second to finish, having kept his place throughout the race. De Briganti had been plugging away, but his speeds were all under 170 m.p.h. It afterwards transpired that he had mistaken one of the turns, and had flown outside his course by 4 miles on each lap. When he had finished, he was seen to be making off on an eighth lap, but it appeared that during his last circuit, he had seen an American airman down and immediately went to search for him. Having run out of petrol, he, too, had to come down, and was towed home.

That ended the race. A splendid race in more respects than one, though every one would have preferred the might of Britain to have been a little nearer at the finish of the race. Doolittle's time was 232·573 m.p.h., and his fastest lap 235 m.p.h. Broad's time for the course was 199·091 m.p.h., and his fastest lap 201·53 m.p.h.

On the Tuesday following the race, the majority of the British party left for New York, in order to attend the dinner given by the Aeronautical Chamber of Commerce at the New York Yacht Club. Mr. Charles Lawrence, of the Wright Engine Company, was in the chair, and Mr. Grover Loening acted as chief toastmaster. Others present included Messrs. Russel and Keyes of the Curtiss Company, Mr. Robinson of the Fairchild Camera Co., M. Louis Bréguet, Col. Scott, of the Canadian Air Force, Messrs. Morselli and de Briganti, Lieuts. Ofstie, Conant and Bettis of the American team, Mr. L. D. Gardner of Aviation, and Messrs. Roe, Vane, Longden, Buchanan, Wilson, Mitchell, Folland, Broad, Hinkler, Fairey and Jones of the British party. A number of speeches were made during the evening, and they all expressed the hope that it would be possible to make a serious British effort next year.

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LESSONS OF THE SCHNEIDER CUP RACE

An Interview with Mr. H. T. Vane

AFTER a defeat it is always well to take stock and to endeavour, if possible, to trace the various causes of that defeat, in order that the lessons learned may be heeded and taken advantage of, so as to turn the next encounter into a victory. In the case of the Schneider Cup Race at Baltimore, the defeat was decisive and unmistakable. Yet we would not say that the position is hopeless. There is every reason to believe that if the proper steps are taken *at once*, Great Britain should have a sporting chance to "lift" the coveted Schneider Trophy next year.

In order to ascertain the views of one who was present, and who is entirely unbiassed in the matter of machines, we have asked Mr. H. T. Vane, Managing Director of D. Napier & Sons, to give our readers the benefit of his opinions in the matter, and although Mr. Vane's three weeks' absence from England has naturally left him with a great amount of work on hand, he has been good enough to spare us the time for an interview for the benefit of readers of FLIGHT.

In the first place, Mr. Vane shares our view that lack of time was a serious factor. Minor troubles remained undiscovered until too late, pilots had no opportunity to become used to their machines, or to practise cornering at high speed. The British machines arrived ay Bay Shore Park long before the race. In fact, they were the first to arrive there, but for several days after their arrival there were no hangars in which to house them, there was no slipway from which to float them. In short, there was nothing. When the tent hangars *were* put up, they were of very inferior quality, and let the rain through in torrents. On this point Mr. Vane is eloquent in his praise of the mechanics, who worked like Trojans and kept cheerful under well-nigh impossible conditions. There is no question of unfair treatment by the Americans in this matter at all. The American machines were in the same plight, but the fact remains that the accommodation was inadequate, and what made it worse for the British team than for the others was that whereas the other competitors did not arrive until much later, the British team were compelled to waste much valuable time, which had been counted upon for practice. Nobody was more sincerely sorry than the Americans, who throughout proved themselves excellent sportsmen and gained the gratitude of all the British representatives. Next year, however, it is essential that permanent hangars be provided, and that all preparations are made well in advance.

The subject of wing radiators is also, in Mr. Vane's opinion, a most important one, and he considers that the Americans scored at least 10 m.p.h. by the saving in head resistance which the wing radiators enabled the Americans to make. There is also a general impression that the American machines were fitted with better propellers than the British, so that undoubtedly again a good deal of speed was lost through this cause. Both of these contributory causes should be capable of being remedied next year.

On the question of pilots, Mr. Vane, although he has nothing but praise for the three British pilots, who did the very best they could under the circumstances, considers that next year we should follow the example of America and enter service pilots, who should be allowed to confine themselves exclusively to practising racing, as test pilots cannot be expected to devote their whole time to practising on fast machines.

One respect in which we undoubtedly scored was in float design. It was admitted on all sides that the British floats were superior to the American, giving much "cleaner" running. Structurally, it is of interest to note that the Short-built Duralumin floats of the Gloster-Napier III. did not collapse when Hinkler's machine broke a strut, and that, although damaged by the revolving propeller, the floats did not leak much and the machine could be towed in.

On the all-important subject of engines, Mr. Vane could not be drawn out, possibly because he did not feel sufficiently impartial. It is, however, worthy of note that out of the six machines that faced the starter on the day of the race, five had American engines and one a British engine. The single British engine came through with flying colours. Out of the five American engines, but two came through, one refusing to start, one catching fire, and one breaking a magneto shaft. The British engine developed more power than the others, and gave no trouble of any kind.

In conclusion, Mr. Vane agrees with the view expressed in FLIGHT some weeks ago, that if Great Britain is to have a chance next year a start must be made *immediately*.

FLIGHT

AIR MINISTER'S VISIT TO MANCHESTER

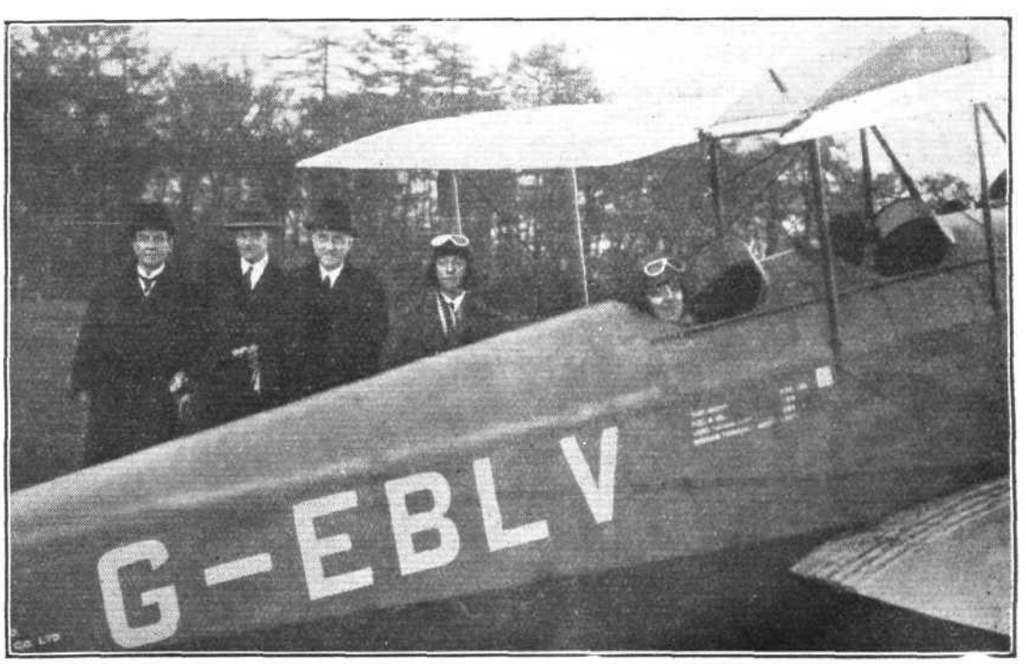
Sir Samuel Hoare the Guest of the Lancashire Aero Club

ON Thursday of last week, November 5, the Secretary of State for Air, Sir Samuel Hoare, paid a visit to Manchester, where he was the guest of the Lancashire Aero Club, whose aerodrome at Woodford he inspected. Travelling down on the 8.30 a.m. train, Sir Samuel Hoare, Air Vice-Marshal Sir Sefton Brancker, Col. Shelmerdine, and other Air Ministry representatives, arrived at Stockport shortly after noon, and were received at the station by Mr. John Leeming, chairman of the Lancashire Aero Club, Sir Wm. Letts, representing Crossley Motors, and Mr. John Lord, representing A. V. Roe & Co. A number of motor cars had been placed at the disposal of the party by Crossley Motors, and the party were conveyed out to the Woodford aerodrome, which is the headquarters of the Lancashire Aero Club. Here the two de Havilland "Moths" and the L.P.W. "Penguin," which form the club's flying stock at present (the Avro biplane being temporarily absent for overhauls) were inspected, and various members of the Club were introduced to the Air Minister. Sir Charles Wakefield, president of the Club, met the party, and Mr. Scholes, one of the Club's flying instructors, took up one of the "Moths," accompanied by a pupil. The Woodford aerodrome covers a very large area, and should be of ample size for any type of machine, the only drawback being that the ground slopes upward from the hangar. The latter is a substantial structure of a permanent character, and was found to be in the process of being thoroughly equipped with steam heating, workshop, tools, machinery, office, &c., so that before long all minor overhauls and repairs should be capable of being carried out on the premises. After the inspection, the party was motored into Manchester, where a number of prominent Manchester people, members of the Club, representatives of the Crossley and Avro firms, met the Secretary of State for Air as the guest of the Lancashire Aero Club at a luncheon at the Midland Hotel.

SIR SAMUEL HOARE AT WOODFORD AERODROME : *Here the Air Minister is seen with Mr. John Leeming and Sir William Letts. At a luncheon given by the Lancashire Avro Club afterwards three new aeroplanes were promised, bringing the total number of machines up to seven.*

Sir Charles Wakefield, Bart., C.B.E., D.L., J.P., President of the Lancashire Aero Club, was in the chair, and after the loyal toast, Sir Charles, in proposing the toast, "The Secretary of State for Air," said that it was a great pleasure to him to be present on this occasion, he himself hailing from Lancashire, as there was an atmosphere of enthusiasm which positively stirred the blood. He pleaded guilty to having spoken and written somewhat optimistically about the future in the air, but of that he was not ashamed. He thought Sir Samuel Hoare would probably agree that it was sometimes necessary to run that risk, in order to awaken public interest, and to obtain support for the pioneers. He was very proud to be associated with the light 'plane movement, and with the progress being made in his native County. They all knew, of course, that what Lancashire thought and did to-day. . . . There was no need to finish the sentence.

Sir Charles thought that for all practical purposes, it could be said that aviaton could now render services as efficiently as any other forms of transport. What was now desirable was to hasten the day when all would be "at home" in the air. The Club of which he was President, and similar organisations, were proving of immense value as a training



At the Lancashire Aero Club Aerodrome: Behind the De Havilland "Moth" are seen Sir Charles Wakefield, Bart., President of the L.A.C.; Mr. John Leeming, Chairman of the Club; Sir Samuel Hoare, Secretary of State for Air; Mr. Cantrill, one of the club's flying instructors. In the cockpit, Mr. Scholes, the club's chief instructor.

ground in this respect. Sir Charles recalled that in the past Britons had been pioneers upon the seven seas. Today, they had an opportunity, if they would take it, to establish a similar leadership in the last of the elements to be conquered by man—the air. The honour of leadership would be to whoever could establish and maintain supremacy by having the highest proportion of the most skilful pilots. The coming of the light aeroplane gave the young men of the present generation the opportunity to become " knights of the air."

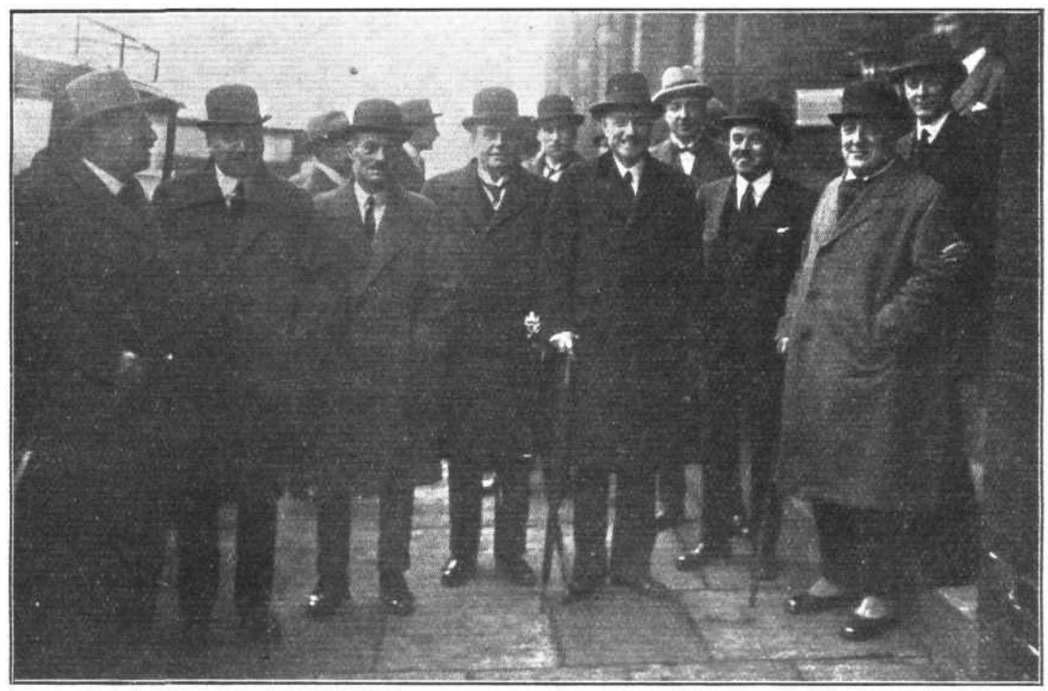
Sir Samuel Hoare, in replying, said he welcomed the chance of coming to Manchester, and of ascertaining on the spot how the Light Aeroplane Club was progressing. He congratulated the Club on having for its President a man like Sir Charles Wakefield, who had done so much to develop British flying. When he (Sir Samuel) was Secretary of State for Air, two years ago, he was very anxious to try the experiment of fostering light plane clubs, and he was now very glad that within a few months of his return to office they had been able to start a certain number of light plane clubs. Sir Samuel then referred to the progress already made, and said that by way of an example, he would take two of these clubs.—the London Aeroplane Club, and the Lancashire Aeroplane Club. The former already had 150 members and 100 on the waiting list, whilst 80 of the Club's members were actually flying. On October 15, the first " A " licence was granted to a member of the London Club. At Manchester, the nucleus of the present Club was founded as a result of a movement initiated by the enterprise of certain members three years ago. He was pleased to note that today there were 150 members of whom all but 10 were flying members. There were 30 associates, and 27 members were under flying instruction. He was glad to learn that four members had been trained *ab initio*, two of whom were ready to take their " A " licences. Sir Samuel here referred to the cost of flying by members of the light 'plane clubs, which appeared to be very little higher than the hire of a motor-car for a similar period. The Lancashire Club started with a great advantage in having at their disposal the Woodford Aerodrome of A. V. Roe & Co. This firm had probably produced more training machines than any other firm in the world, and the Club was fortunate in being so closely associated with such a firm. The Air Minister paid a tribute to the two flying instructors of the Club, Messrs. Scholes and Cantrill, both of whom, he was glad to note, were officers of the Royal Air Force Reserve, and who were giving their valuable services for nothing, thus helping on the great work. He was at Manchester that day to wish the Club all success in its enterprise, and to tell them that he fully realised their difficulties, among which he referred to the relatively small number of machines. He was most anxious that the light plane clubs should be self-supporting and as free from Government interference and control as possible. He would appeal to the citizens of Manchester to give the Club support and so help it to become independent.

The experiment they were making with the light plane clubs was an important one. The aim was not merely to enable a few enthusiasts to make joy rides in the clouds. If that were all that was intended, the *Daily Mail* would not be giving £5,000 next year in prizes, and the Air Ministry would not be giving the support it did. The experiment was something much more important, and was part of the fundamental policy of making fuller use of the discovery of flying. Hitherto, the air had been the province of a limited number of highly trained military pilots, and the problems connected with the air had been almost exclusively concentrated in a Government office. This was too narrow a basis for great development. They wanted to get men and women directly interested and to get them to think about air problems. The light aeroplane clubs would help greatly in two difficult tasks with which he was at present confronted : firstly, that of home defence against air attack, and secondly, the improvement of Empire communications by air. His task, and that of his successors, would be made much easier if they had to assist them in every great city a nucleus of men and women who had flown themselves and who understood the problems of the air.

Mr. John Leeming, Chairman of the Lancashire Aero Club, said they owed a great deal to the Director of Civil Aviation, Air Vice-Marshal Sir Sefton Brancker. They had always found that they were able to go straight to Sir Sefton with their troubles and, being not only a stranger to, but a hater of, red tape, Sir Sefton had always been able to help by getting things done without delay, and the Clubs had come to look upon Sir Sefton as their best friend. He thought the luncheon would mark the turning point in the life of the Club, and expressed the hope that the next time the Air Minister visited Manchester he would be met, not by three machines, but by a whole squadron.

Sir Sefton Brancker thanked Mr. Leeming for the kind words he had said about him, but at the same time he was afraid that by his reference to Sir Sefton's hatred of red tape, Mr. Leeming might be found to have ruined his (Sir Sefton's) reputation as a civil servant! He assured the clubs that in him they would always have a good friend, and after telling some amusing anecdotes in his own inimitable manner, he called attention to the fact that aviation history was intimately bound up with Lancashire, where many years ago Mr. A. V. Roe produced his first tractor biplane, a type which had now become almost universal.

Air Minister visits Avro Works: Our group includes, from left to right, Air Vice-Marshal Sir S. Brancker, Director of Civil Aviation, Sir William Letts, Sir Kenneth Crossley, Sir Charles Wakefield, Sir Samuel Hoare, Mr. A. W. Hubble, Mr. John Lord, Mr. Harry Fieldes, and Mr. Dobson.



Sir William Letts, in a brief speech, thanked his old friend, Sir Charles Wakefield, for coming to Manchester to preside at the luncheon that day, and invited the guests to inspect the Avro works during the afternoon.

Sir Charles Wakefield added one more item to his already long list of donations to aviation by stating that he was prepared to make the Lancashire Aero Club a present of another aeroplane. Sir William Letts said that on behalf of the directors of his firm he would be pleased also to present another aeroplane to the club, both announcements naturally being loudly acclaimed by those present. Mr. George Parnall offered £100 towards a third machine, and a gentleman representing motor interests in Manchester, said Lancashire motor firms would be willing to defray the rest of the cost of a third machine. Another gentleman representing the brewing industry stated that, as owners of the land upon which the aerodrome was situated, he had much pleasure in promising to see if something very substantial could not be done by way of helping the club in the matter of ground rent; and thus a highly successful luncheon concluded.

In the afternoon the party visited the Manchester works of A. V. Roe and Company, where they were received by Sir William Letts, Sir Kenneth Crossley, Mr. A. W. Hubble, Mr. John Lord, and Mr. Harry Fildes, and conducted around the works. A considerable number of machines were seen in course of production, but when it is pointed out that at a pinch this factory would be able to produce 500 machines per month, it will not come as a surprise when we say that at present the works are *not* employed to their full capacity. The orderliness in the large factory was most remarkable, and bore testimony to the organising ability of Mr. Dobson, the works manager.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

JOINT STANDING COMMITTEE

A MEETING of the Joint Standing Committee of the R.Ae.C. and S.B.A.C. was held on Wednesday, November 4, 1925, when there were present :—

Royal Aero Club.—Lieut.-Col. F. K. McClean, A.F.C., in the chair, Air Vice-Marshal Sir W. S. Brancker, K.C.B., Lieut.-Col. W. A. Bristow.

Society of British Aircraft Constructors.—T. O. M. Sopwith, C.B.E., Capt. H. E. P. D. Acland, Commander James Bird. In attendance: H. E. Perrin, Secretary, R.Ae.C. and C. V. Allen, Secretary, S.B.A.C.

The following matters were discussed :—

The King's Cup Race, 1926.
Handicapping for the King's Cup Race.
Two-seater Light Aeroplane Competition, 1926.
Schneider International Seaplane Race, 1926.
Limit of Landing Speed in High Speed Races.

Offices: THE ROYAL AERO CLUB,
3, CLIFFORD STREET, LONDON, W.1.
H. E. PERRIN, Secretary

LIGHT 'PLANE CLUB DOINGS

The Lancashire Aero Club

ON Thursday, November 5, a few instruction flights were given in the morning and Sir Samuel Hoare, the Secretary of State for Air, watched D. F. Dyson have an instruction from Mr. Scholes. Sir Samuel Hoare and Air Vice-Marshal Sir Sefton Brancker expressed their pleasure at the condition of the machines and their satisfaction at the Club's organisation. Col. Shelmerdine was also with the party and went fully into the details of how the flying was arranged.

On Friday, November 6, it was a perfect day for flying. Mr. Scholes took "L.V." up for a brief test flight and then gave S. Crabtree half-an-hour's "dual." J. Leeming did 15 minutes "solo," and performed two of what he insists calling "stalled turns." These "stalled turns" are becoming famous as people on the ground who watch his flying from take-off to landing never know how they have been done until Mr. Leeming lands and tells the watchers all about it. H. S. Macnair then went with Mr. Scholes for 20 minutes; this was Mr. Macnair's first "dual." Finally, S. Crabtree went up again with Mr. Scholes and used up the remaining daylight. All safely back in the hangar at 4.55.

Mr. Cantrill, the Club's other instructor, having no pupils down at the aerodrome, spent the afternoon shooting and returned with two good hares. This shooting is becoming a popular pastime for those who are waiting to fly.

On Sunday, November 8, it was not possible to fly during the morning owing to the bad weather. After lunch the L.P.W. was used a little and then Mr. Scholes took L.W. up on a ten minutes' test after which he took the following pupils for "dual." S. Crabtree, 30 mins. H. Stern, 20 mins. D. F. Dyson, 20 mins. A. Tummers, 15 mins.

Mr. Cantrill on L.R. after test took the Air Ministry representative who was down inspecting the aerodrome up for 15 minutes. Then H. Goodyear had 20 minutes' "dual," and B. Wilkinson 15 mins. Mr. Stern is setting a new fashion in pilot's suitings, the garb he wore on Sunday, it is believed, is one of the latest winter styles illustrated in last week's "Vogue."

London Aeroplane Club

DURING the week ending Saturday, November 7, 1925, flying instruction was carried out on every day with the exception of Tuesday. Flying on certain days was somewhat restricted owing to the bad weather. The total flying time was 23 hours 15 minutes.

Practically all the instruction was given by Mr. F. G. M. Sparks as the second instructor Mr. G. T. Witcombe was taking a week's holiday due to him after three months' instructional flying.

The following members took flying instruction :—C. H. Craig, C. Quirk, E. S. Brough, N. Jones, Mrs. Eliott-Lynn, R. Thomas, Major Beaumont, D. Kittel, S. C. Richards, R. Holmes, J. Barros, H. Solomon, W. E. P. Johnston, H. F. Wight, Miss Salusbury, W. Hay, A. Lees, A. Clarkson, Miss O'Brien, S. Thompson, D. H. P. Esler, Mrs. Atkey, K. V. Wright, R. P. Cooper, R. A. St. John, A. J. Richardson, J. S. M. Michie.

The following members made solo flights :—Mrs. Eliott-Lynn, G. N. Warwick, W. Roche Kelly, and G. H. Craig.

On Wednesday, November 4, Mrs. Eliott-Lynn made further flights in the tests for the Aviator's Certificate. Having attained a height of 6,000 ft. the descent was made with engine cut off and the alighting made on the aerodrome within the specified distance.

The "Autogiro"

AN informal discussion on the de la Cierva "Autogiro" will take place at the Library of the Royal Aeronautical Society, at 7, Albemarle Street, on Monday evening, November 16, at 6 p.m. By now there has probably been time for members of the Society to go into the question a little more fully than was possible at the time the distinguished inventor presented his paper before the Society, and some interesting views will probably be put forward. Members are invited to attend and to take part in the discussion, and we gather that non-members will be admitted, subject to the seating capacity of the Library being sufficient.

M. Coste's Fine

IT will be remembered that the French pilot, M. Coste, who came to grief when flying over the Black Forest (when his companion Thierry was killed), was fined by the German authorities for flying over Germany without permission. Recently, Coste paid up the second instalment of the fine, and it is now reported that this has now been remitted as an act of grace.

ROME–TOKYO–ROME

Marquis de Pinedo's Grand Air Tour Successfully Concluded

WHAT may be described as the most extensive aerial tour on record has just been brought to a successful conclusion by the arrival in Rome, on November 7, of the Marquis de Pinedo and his mechanic Campanelli, who just 201 days previously had left Rome, flying a Savoia S.16ter. flying-boat (400 h.p. Lorraine Dietrich engine) for a flight to Tokyo, via Australia, and back. His achievement is all the more remarkable in that he was flying a standard type of flying boat—*not* an amphibian, as stated in certain quarters—and that practically speaking, the flight was unorganised along most of the route. In the matter of fuel supply, however, we think we are right in stating that our old friends "Shell" and "Castrol" saw to it that the Marquis was not "let down" for want of supplies at any point of the long, long journey.

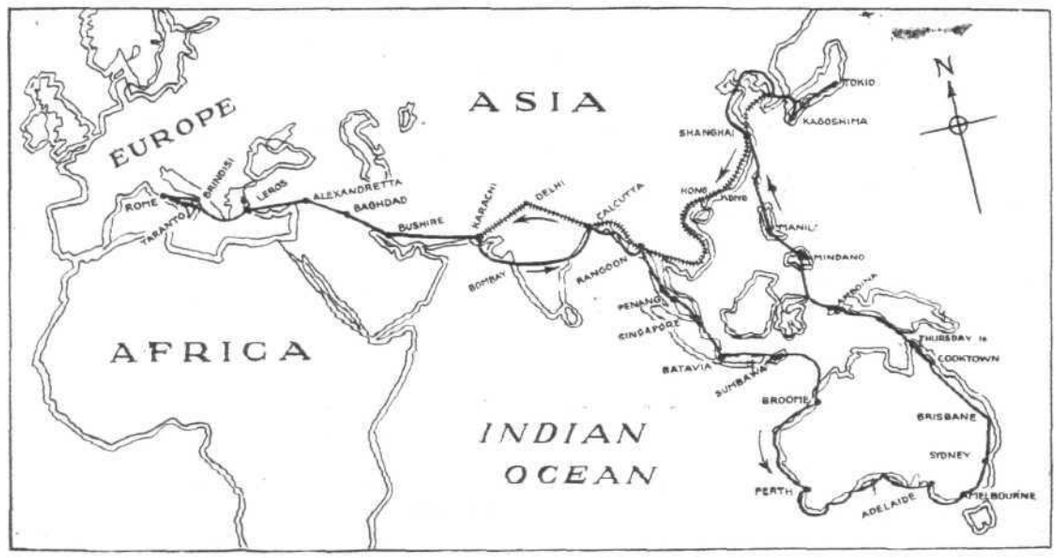
Throughout the whole flight the engine was only changed once—at Tokyo—while the machine, and propeller, are the same as from the start, apart, of course, from minor repairs, &c. We need hardly refer here to the outward journey, for this has already been dealt with in previous issues of FLIGHT. We might remind our readers, however, that out of the six and a-half months during which the flight was in progress, five weeks were spent at Melbourne, and three weeks at Tokyo. The total distance covered by the whole flight is in the neighbourhood of 35,000 miles, out of which must be included for special mention two sections—of about 600 and 1,200 miles respectively—passing across the Continent of India, over more or less dry land, on both out and home trips.

As regards the return home, we have also recorded—briefly, it is true—the progress made week by week, and so it only remains for us to refer to the final stages of this remarkable flight.

Last week we left the Marquis at Bander Abbas, on the Persian Gulf, with his flight rapidly drawing to a conclusion. Indeed, his homeward flight constitutes something of a record in so far as long-distance-in-shortest-time flights are concerned, for the 15,000-odd miles were accomplished in 22 days!

However, to proceed with the final stages of the flight. On November 3, the Marquis continued his journey from Bander Abbas and landed that morning at Bushire, proceeding later on to Baghdad. The next day he flew from Baghdad to Alexandretta, whence he proceeded the following morning, to Taranto, stopping *en route* at Leros. At Taranto he received an enthusiastic reception from thousands of spectators, civil and military. He was presented with a silver cup, as was also Campanelli, while the Municipality decided to confer the freedom of the city upon him.

The next stage finished at Naples, where again he met with a great reception. On November 7, the Marquis arrived back in Rome, alighting on the Tiber to the accompaniment of enthusiastic cheering from several thousand spectators. The first to welcome him back was his father, after which greeting he was received by Sig. Mussolini and Members of the Cabinet. The Prime Minister and the Marquis then drove to the Palazzo Chigi, where the airman gave an account of his flight—a huge crowd collecting outside the building meanwhile. Sig. Mussolini and the Marquis then appeared on the balcony, and the Prime Minister once again publicly thanked the airman and his mechanic.



Sketch Map showing the route taken by the Marquis de Pinedo and his mechanic Campanelli on the Rome–Tokyo–Rome flight in the Savoia S. 16ter flying boat (400-h.p. Lorraine Dietrich engine), April 21 to November 7, 1925.

The following is a brief log of the return section:—

Oct.	17	Tokyo-Kagoshima	620	Miles.
,,	18	Kagoshima-Shanghai ..	558	,,
,,	19	Shanghai-Hongkong ..	682	,,
,,	20	Hongkong-Haiphong ..	496	,,
,,	21	Haiphong-Saigon	992	,,
,,	23	Saigon-Bangkok	620	,,
,,	27	Bangkok-Rangoon	403	,,
,,	28	Rangoon-Calcutta	837	,,
,,	29	Calcutta-Benares	496	,,
,,	30	Benares-Delhi	465	,,
,,	31	Delhi-Karachi	868	,,
Nov.	1-2	Karachi-Bander Abbas ..	713	,,
,,	3	Bander Abbas-Baghdad ..	961	,,
,,	4	Baghdad-Alexandretta ..	558	,,
,,	5	Alexandretta-Taranto ..	1,116	,,
,,	7	Rome	300	,,

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Meteorological Committee Report to Air Council, 1925

THE year under review is the seventieth year of the Meteorological Office, and the fifth year in which the cost of the Meteorological Office has been borne on Air Ministry Votes. The report follows the lines of previous reports. Features of interest this year are the establishment of a new division to deal with questions concerning meteorology for airships, the meetings in Paris of the Meteorological Sub-Commission of the International Commission for Air Navigation, and the formation of a permanent committee on agricultural meteorology in connection with the Ministry of Agriculture. This scheme has for its object the collection and co-ordination of meteorological agricultural and phenological data from a network of observing stations. The formation of the new division on Airship Meteorology was rendered necessary by the decision of His Majesty's Government to proceed with the development of airships and ultimately to establish a regular airship service between this country and India. The report may be obtained directly from H.M. Stationery Office, or through any bookseller, price 1*s.* 9*d.* net.

THE R.A.F. IN LORD MAYOR'S PROCESSION: Above, left, a workshop lorry towing a D.H.53. Right, a contingent of the R.A.F. Below, left, the Royal Air Force Band; and, right, a mobile anti-aircraft gun.

SIR SAMUEL HOARE'S GUILDHALL SPEECH

SIR SAMUEL HOARE, Secretary of State for Air, in response to the toast of the Royal Air Force at the Guildhall Banquet on Monday, the 9th inst., said that he was happy to have an opportunity of reporting progress upon a field of restless activity that was constantly changing. During the last twelve months our air defences had been substantially strengthened, not only in quantity and equipment, but also by the inclusion of a Territorial element, and Sir Samuel expressed his gratitude to the Territorial Associations of the City and County of London for the help they had given him in starting this new breed of "Sky Terriers."

Referring to the Air Force abroad, Sir Samuel said that he and the Colonial Secretary, Mr. Amery, returned from their 3,000 miles flight, made in the spring of the year, to the Middle East, with the conviction that the Air Command was carrying out its difficult duties overseas with the greatest efficiency and economy. He, however, did not wish to boast of the achievements of the Royal Air Force, but would rather leave the results produced to speak for themselves. In London, during the last year, there had been two chances of testing the worth of the R.A.F. Firstly, regarding recruits and their elementary training, Sir Samuel asked what better opportunity could have been provided than the Wembley Tattoo; and, secondly, for those who desired to note the progress made in the real work of the Air Force—military flying and air defence—what better evidence could have been obtained than at the Air Force Dsiplay at Hendon?

The Secretary of State for Air then made reference to the higher all-round standard of the personnel, and also the improvement in the standard of equipment now employed by the R.A.F.; and, continuing, said: "We are certainly anxious to make the fullest possible use of new inventions and discoveries. One of these inventions seems to us to offer an opportunity for most valuable developments. If a machine can be made to land vertically, flying may be brought within the reach of thousands for whom it would otherwise have been impossible. If stalling, the most constant source of accidents, can be eliminated, the risk of flying will be reduced to an amazing extent. It is too early to say whether the windmill plane will help us to solve these problems. It is not, however, too early to say that the invention is sufficiently remarkable as to be worthy of fuller trial. I have accordingly decided to have four or five of those machines of different types built without delay in England."

Renewed attention to the very important question of high-speed British machines was being given, continued Sir Samuel, although he personally did not suggest that speed was everything. During the past few years they had to spend money upon urgent necessities, and had had little left for record breaking.

Valuable lessons had been learnt from the high-speed seaplanes which had recently been constructed and loaned to the makers for entry in the Schneider Cup Race, and the speaker mentioned that he was considering the placing of orders for one or more machines of still higher performance next year, and intended at once to take up the question of next year's entry with the British constructors. "I hope that the British industry will see its way to enter on its own resources," continued Sir Samuel. "From every point of view it is better that private enterprise should take the field in these events. If, however, there is no other way of securing a British entry for next year's race, I shall be prepared to consider again the loan of Air Ministry machines under the same conditions as this year."

"But the great air race is not the contest over any international trophy; it is the race between the powers of peace, and the powers of war, for the control of the air. Hitherto the discovery of flying, the greatest discovery of the twentieth century, has done little more than open the air to the most terrible forms of modern warfare. Is the air to be left as a battle-ground for all the most destructive inventions of speed and power and gas? Are the powers of war to hold dominion in a sphere that was surely intended for the pursuits of peace? Is the discovery, to which generation after generation has devoted its untiring efforts, to prove a Frankenstein that will destroy civilisation?

These are the questions that are constantly in the mind of anyone who is occupied with air defence and the future possibilities of air warfare. These are the questions that urge me to develop so far as I can the peaceful uses of the air, whether it be by the encouragement of Empire air routes, or whether it be by the creation of flying clubs in our great cities. These are the questions that make me hope that from the agreement at Locarno will spread over Europe new atmospheric conditions in which the clouds of war will be driven from the air, and a clearer and serener sky make it possible for flying to become the blessing that it was intended, and not the curse to which strife and suspicion, fear and hatred may pervert it."

CORRESPONDENCE

The Editor does not hold himself responsible for opinions expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters intended for insertion in these columns.

MODEL FLYING

[2300] With reference to Mr. F. A. Lowe's remarks on "Model Flying" in your correspondence column of November 5 issue, I would like to take the opportunity of enlightening him a little on the various queries raised in his letter. In the first place I fear he cannot have been a very ardent reader of FLIGHT, or he would have seen the very numerous reports which have been published in your journal for the past five years dealing with the work of the Society of Model Aeronautical Engineers. I would like to point out for the interest of your correspondent that this body of aero-modellists represents the outcome of a desire to continue the art and sport of model flying since the termination of the war. Needless to remark, the war produced a change in circumstances for practically everybody, and therefore it was not surprising to find that there was not sufficient support (even around London) to run separate clubs as in pre-war days, so it was decided to form a single club with the "enthusiastic residue." The S.M.A.E. (as the club is now known) contains many of the pioneers of model flying and of the London model clubs of 1913 and 1914—such men as Mr. Hersom, Mr. Houlberg, Mr. Pavely, Mr. Evans, etc., still being active members—and has carried out its full programme of flying events yearly, together with indoor discussions and lectures during the winter months. Space will not permit to deal in detail with the ground that has been covered, and the progress that has been made (more especially in the development of the fuselage type of model) by the Society during these years, but if Mr. Lowe would care to refer to the back numbers of FLIGHT since 1920, he will find that model flying is by no means dead, at any rate, in the London area.

In conclusion (on behalf of the S.M.A.E.), I would like to wish Mr. Lowe every possible success in his new venture to re-organise a model flying club in the Liverpool district, and hope that in the near future there may be a Liverpool Club which will be willing to take part in an inter-club competition as "in the old days." Trusting we may have the pleasure of hearing further from Mr. Lowe.

B. K. JOHNSON,
Competition Secretary, S.M.A.E.

A sketch of the new Fleet Air Arm Badge, to be worn by officers of the Royal Navy and Royal Marines attached to the Royal Air Force

FLIGHT

THE ROYAL AIR FORCE

London Gazette, November 3, 1925.

General Duties Branch

The following Flying Officers are transferred to Reserve, Class A. (Nov. 1):—J. J. Comerford, C. McL. Reid. The following are restored to full pay from half-pay:—Squadron Leader R. L. G. Marix, D.S.O. (Sept. 16) (substituted for *Gazette*, Oct. 6); Flight Lt. G. C. O'Donnell, D.F.C. (Oct. 26).

Pilot Officer on probation A. R. Dunlop resigns his short service commn. (Oct 31); the short service commn. of Pilot Officer on probation F. Sisson is terminated on cessation of duty (Nov. 1); Flying Officer J. Messer-Bennetts (Lt., K.O.S.B.) relinquishes his temp. commn. on return to Army duty (Oct. 29).

Stores Branch

Flight Lt. G. Oliver is placed on retired list (Nov. 3); the short service commn. of Pilot Officer on probation J. Cuming is terminated on cessation of duty (Nov. 4).

Reserve of Air Force Officers

S. W. White is granted a commn. in Class A, General Duties Branch, as a Pilot Officer on probation (Nov. 3); Flying Officer C. H. L. Needham resigns his commn. in Class B on appointment to a commn. in Class A.A. (Aug. 13); C. H. L. Needham is granted a commn. in Class A.A., General Duties Branch, as a Pilot Officer on probation (hon. Flying Officer) (Aug. 13); Pilot Officer R. A. Whitehead is confirmed in rank (Sept. 26). The following are transferred from Class B to Class C (Nov. 3):—Observer Officer A. W. C. Bayes, Flying Officer C. B. M. Dale.

AUXILIARY AIR FORCE

General Duties Branch

The following to be Flying Officer:—No. 603 (City of Edinburgh) Squadron.—T. Usher (Nov. 10).

Memorandum

The permission granted to Lt. R. W. Griffiths to retain rank is withdrawn on his enlistment in the Territorial Army (May 5).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Wing Commander.—J. B. Bowen, O.B.E., to Cambridge University Air Squadron, for duty as Chief Instructor; 1.10.25.

Squadron Leaders: A. G. Weir, to Oxford University Air Squadron; 11.10.25. L. G. S. Payne, M.C., A.F.C., to H.Q., Iraq; 31.10.25. B. E. Baker, D.S.O., M.C., A.F.C., to Air Ministry; 4.11.25. H. S. Powell, M.C., to No. 7 Group H.Q., Andover; 5.11.25. P. A. O. Leask, to Aircraft Depot, Iraq; 21.10.25. N. C. Spratt, O.B.E., to H.Q., Iraq; 21.10.25. J. B. Cole Hamilton, to No. 20 Sqdn., India; 8.10.25.

Flight-Lieutenants: J. S. T. Fall, D.S.C., A.F.C., to No. 6 Sqdn., Iraq; 3.10.25; A. S. G. Lee, M.C., to R.A.F. Depot; 4.11.25. J. W. B. Grigson, D.S.O., D.F.C., to H.Q., Iraq; 28.10.25. C. J. S. Dearlove, to H.Q., Iraq; 28.10.25. F. G. A. Robinson, to Station H.Q., Spittlegate; 6.11.25. R. V. Goddard, to Cambridge University Air Sqdn.; 1.10.25. E. C. Emmett, M.C., D.F.C., to R.A.F., Depot; 9.11.25. G. H. Cock, M.C., J. J. Williamson, A.F.C., J. E. Maclennan, and G. S. Hodson, A.F.C., to No. 4 Flying Training Sch., Egypt; 17.10.25. C. L. Scott, D.S.C., to No. 216 Sqdn., Egypt; 17.10.25. M. F. Browne and G. T. Richardson, to Aircraft Depot, Egypt; 17.10.25. G. M. F. O'Brien, D.S.C., D. L. Blackford, J. D. S. Denholm, and R. C. Bryant, to H.Q., Egypt; 17.10.25. H. L. Rough, D.F.C., to No. 208 Sqdn., Egypt; 17.10.25. S. D. Macdonald, D.F.C., to No. 47 Sqdn. Egypt; 17.10.25.

Flying Officers: F. Woolley, D.F.C., to remain at Inland Area Aircraft Depot, Henlow, instead of to No. 1 Flying Training Sch. as previously notified. (Hon. Flight-Lieut.) D. J. Stewart, to No. 2 Flying Training Schl., Digby; 10.11.25. (Hon. Flight-Lieut.) C. M. E. Gifford, to R.A.F. Base, Gosport; 10.11.25. F. E. North, to No. 45 Sqdn., Iraq; 3.10.25. H. Buxton, to Engine Repair Depot, Egypt; 17.10.25. N. Vintcent, D.F.C., to No. 208 Sqdn., Egypt; 17.10.25. A. H. Love, to Schl. of Army Co-operation, Old Sarum; 9.11.25. L. H. Stewart, to Aircraft Depot, Iraq; 18.10.25. (Hon. Flight-Lieut.) R. W. M. Hall and A. H. D. Livock, to No. 5 Sqdn., India; 15.10.25. R. W. Pilling, (Hon. Flight-Lieut.) L. S. Hamilton and (Hon Flight-Lieut.) F. W. Wiseman-Clarke, to No. 20 Sqdn., India; 15.10.25. (Hon. Flight-Lieut.) E. H. D. Spence and R. O. Jones, to No. 27 Sqdn., India; 15.10.25. T. Fetherstonhaugh, to No. 28 Sqdn., India; 15.10.25.

Pilot Officers: H. T. Messenger, to No. 70 Sqdn., Iraq; 3.10.25. J. E. Davies, to No. 45 Sqdn., Iraq; 3.10.25. M. H. Jenks, to No. 8 Sqdn., Iraq; 3.10.25.

Stores Branch

Flight-Lieut.: W. J. King, D.C.M., to H.Q., Egypt; 17.10.25.

Flying Officers: A. T. Wells and L. T. Sanderson, to Stores Depot, Egypt; 17.10.25.

Accountant Branch

Flying Officers: F. H. Wakeford, to Aircraft Depot Iraq, instead of to R.A.F. Brit. Hospital, as previously notified; 22.9.25. B. L. Blofeld, to Stores Depot, Iraq, instead of to No. 55 Sqdn., as previously notified; 22.9.25. H. A. Murton, to No 1 Sqdn., Iraq, instead of to No. 4 Armoured Car Co., as previously notified; 22.9.25. W. R. Donkin, to No. 4 Armoured Car Co., Iraq, instead of to Aircraft Depot, as previously notified; 22.9.25.

Pilot Officers: R. W. Collinson, to No. 3 Sqdn., Upavon; 10.11.25. C. Lorimer, to Record Office, Ruislip; 13.11.25.

Medical Branch

Squadron Leader: J. Kyle, to R.A.F. Depot, on transfer to Home Establ.; 26.10.25.

Flight-Lieut.: C. A. Lindup, to No. 60 Sqdn., India; 14.10.25.

Flying Officers: G. M. Anderson, M.B., and B. L. Edwards, M.B., to Research Lab. and Medical Officers' Schl. of Instruction, Hampstead, on appointment to Short Service Commns. for short course; 28.10.25. J. McM. Wilder, to Schl. of Army Co-operation, Old Sarum; 23.10.25. W. D. McKeown, M.B., to Research Lab. and Medical Officers' Schl. of Instruction, Hampstead, on appointment to a Short Service Commn., for short course; 3.11.25.

NAVAL APPOINTMENTS

The following appointments were made by the Admiralty on November 6:—

Lieut.-Comdrs.: P. W. C. Sharpe, H. F. Besant, and J. W. C. O. Shelton, to Ark Royal (November 17); F. C. Harrison D.S.O. to Eagle (on arrival in home waters).

ALAN COBHAM'S CAPE TOWN FLIGHT

ALL being well, on Monday next, November 16, Alan Cobham, the Aerial Globe Trotter, will start on his next big air adventure—the Imperial Airways Survey Flight from London to Cape Town and back. We do not propose to give the full details of this venture in the present issue of FLIGHT—these will be published next week—but will just record the fact that the start will be made and give the following salient points regarding the flight.

The most important, perhaps, is machine and engine that will be employed to carry him over this long distance. The machine is a De Havilland 50—a type that has already proved its worth in ventures of this character—and the engine fitted for this occasion is a Siddeley "Jaguar," in place of the famous Siddeley "Puma," usually fitted in this excellent little 'bus. We venture to predict that Mr. Cobham will retain that same confidence in his engine throughout the flight as he had with the "Puma"—especially as this time, we understand, the engine will again be under the tender care of Mr. Elliott.

It may be of interest to note here that the D.H.50 for this African flight is the identical machine that carried Sir Sefton Brancker, with Mr. Cobham at the "stick," in the recent famous Indian tour.

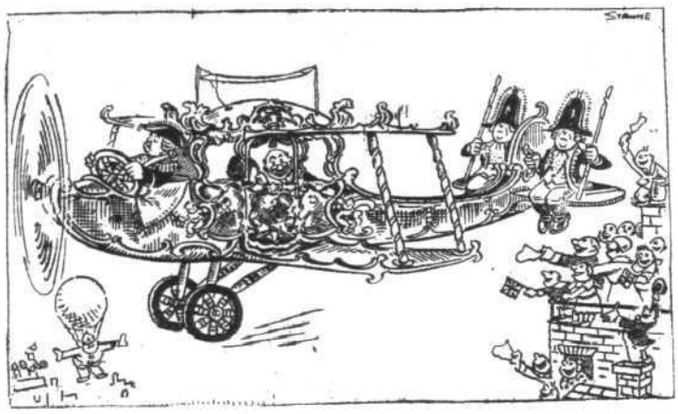
As regards the route to be taken, briefly, this will be via Pisa, Brindisi, Athens, Gallum, Cairo, Assuan, Wadi Halfa Khartoum, Malakal, Jinga, Kisumu, Pretoria, Johannesburg, Bloemfontein, and Cape Town.

It is obvious that there are many problems involved in a flight of this kind—embracing, as it does, many stages over difficult and practically unknown country—but we understand that all the necessary precautions have been taken to make the flight a success, a success which, we feel sure, all our readers will join us in wishing may speedily and safely be accomplished.

Short-Service Officers Required for Flying Duties, R.A.F.

THE Air Ministry announces:—The Royal Air Force is prepared to accept, during the next few months, a number of officers for flying duties under the short-service commission scheme, and applications are accordingly invited from suitable candiates.

Applicants should be between the ages of 18 and 25, well educated, of sound physique, and possessed of good eyesight. Those judged from their applications to be suitable will be interviewed at the Air Ministry by a Selection Committee, and if selected and passed by the Medical Board, will be gazetted as pilot officers on probation. Provided they qualify for promotion, officers become eligible for the rank of Flying Officer after not less than 18 months' service. Short-service commissions are granted for five years' service on the active list, followed by a period of four years' service on the Reserve. The present yearly rates of pay and allowances for unmarried officers amount to about £420 for Pilot Officers, £490 for Flying Officers under two years' service, and £540 for Flying Officers over two years' service. On transfer to the Reserve on completion of their period of five years' active list, service officers receive a gratuity of £375. A strictly-limited number of officers serving on short-service commissions may be selected for transfer to the permanent list. Requests for forms of application and copies of the detailed regulations should be made in writing to the Secretary, Air Ministry, Kingsway, London, W.C.2.



"SOME DAY?" From a cartoon by Strube in the "Daily Express"

SOCIETY OF MODEL AERONAUTICAL ENGINEERS

THE first meeting of the Society was held at the Y.M.C.A. on Tuesday, October 27 last, which was well attended by both visitors and members. Two new members were enrolled, namely, Mr. W. G. Gadd and Mr. Jackson.

Some very valuable suggestions were given to the members of the Research Committee, who were present to assist them in preparing the competition programme for 1926.

Anyone who is unable to attend these indoor meetings and would like to give the Society their suggestions, will they communicate with the Technical Secretary, Mr. B. K. Johnson, who will be pleased to receive them.

The following meetings have been arranged, viz.:—

November 17: Dr. A. P. Thurston will open a discussion on the advantages gained from model aeroplane construction.

December 1: Mr. B. K. Johnson will give a lecture illustrated by lantern slides showing the progress made during 1925.

January 12: Mr. W. E. Evans will give a lecture on his research work during the past two years on propellers.

January 26 will be a committee meeting.

February 9: The annual general meeting.

Anyone who is desirous of being present at any of the above lectures can receive an invitation if they will communicate with the Hon. Secretary, A. E. Jones, 48, Narcissus Road, London, N.W.6.

The following are the official British model aeroplane records to October, 1925.

British Model Aeroplane Records to October, 1925

	Holder of Record.	Duration in Seconds
Fuselage Models		
Fuselage glider	F. de P. Green	48·4
Fuselage flying model (rubber-driven), R.O.G.	S. C. Hersom	34
Fuselage flying model (rubber-driven), hand launched	R. N. Bullock	42·2
Fuselage flying model (rubber-driven), compressed air, R.O.G.	D. A. Pavely	43
Spar Models		
Twin pusher type (R.O.G.)	S. C. Hersom	247
Spar tractor (R.O.G.)	J. E. Louch	94
Farman type (hand launched)	C. A. Rippon	37·8
Farman type (R.O.G.)	C. A. Rippon	32·4
Spar glider	C. J. Burchell	53·4
Seaplanes		
Spar tractor type	S. C. Hersom	43
Twin pusher type	S. C. Hersom	65
Other Types		
Compressed air (non-fuselage)	D. A. Pavely	70
Petrol driven	D. Stanger	51

* * * *

Death of René Hanriot

IT is with the greatest regret that we have to announce this week the death of one of France's pioneer aircraft constructors, Monsieur René Hanriot, after a quite short illness. The name of René Hanriot has been associated, prominently and honourably, with French aviation from the earliest days. It is impossible to think of the famous names familiar from early French aviation, such as Reims and Mourmelon, without coupling with them the name of René Hanriot. Originally a pioneer in the automobile world, René Hanriot became a pioneer in the aviation world, and he leaves behind him one of the best-equipped aircraft factories in France at the present day, the works at Carrières-sur-Seine. From a modest beginning, René Hanriot worked up to a prominent position in the French aircraft industry, one of whose most esteemed and honoured members he was. In his early struggles he was assisted by his son Marcel Hanriot, who was at the time little more than a child, but who showed a remarkable aptitude for flying, and who was one at time France's youngest pilot. In fact, we suspect that "young Marcel" as he was affectionately known, took his father's aeroplanes into the air long before he had any right to do so. On one occasion, we remember, he took up four passengers in the cockpit of a Hanriot monoplane designed for one man only. In England also the name of René Hanriot is closely associated with the early history of flying. There was at Brooklands in 1910, or thereabouts a curious monoplane with boat-built fuselage and very unorthodox wheel control, bearing the name of René Hanriot, but affectionately nicknamed "Henrietta." The name will recall to many early Brooklands pilots, memories of the good old days. A little later, a more modern version was brought to this country and flown by an Italian pilot, one Sabelli, who also helped to make history. Of recent years, René Hanriot specialised particularly in the production of school machines and red cross aeroplanes, with both of which types he attained considerable success. In fact, it may probably be said that the Hanriot school machines occupy a position in France similar to that held by the Avro 504 in this country. We feel sure our readers will join us in an expression of sympathy with the relatives of René Hanriot in their grievous loss. To Marcel Hanriot especially the loss of a devoted father and a trusted adviser must be a great blow, which only time can heal.

* * * *

PUBLICATIONS RECEIVED

The Weather Map. An Introduction to Modern Meteorology. By Sir Napier Shaw, F.R.S. 6th issue. Air Ministry, Meteorological Office. H.M. Stationery Office, Kingsway, London, W.C.2.

Bibliography of Aeronautics, 1920-1921. United States National Advisory Committee for Aeronautics, Washington, D.C., U.S.A.

Bibliography of Aeronautics, 1922. United States National Advisory Committee for Aeronautics, Washington, D.C., U.S.A.

* * * *

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

APPLIED FOR IN 1924

Published November 12, 1925

9,821. A. G. VON BAUMHAUER. Construction of flying-machines, particularly helicopters. (241,243.)

17,998. R. DREUX. Flying-machines. (219,712.)

30,705. SOC. DU CARBURATEUR ZENITH. Automatic altimetric correcting-apparatus for carburettors of aircraft engines. (226,811.)

APPLIED FOR IN 1925

Published November 12, 1925

15,940. A. LAMBLIN. Radiators. (235,909.)

FLIGHT

The Aircraft Engineer and Airships

36, GREAT QUEEN STREET, KINGSWAY, W.C.2.

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Telephone: Gerrard 1828.

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